

A CHILTON

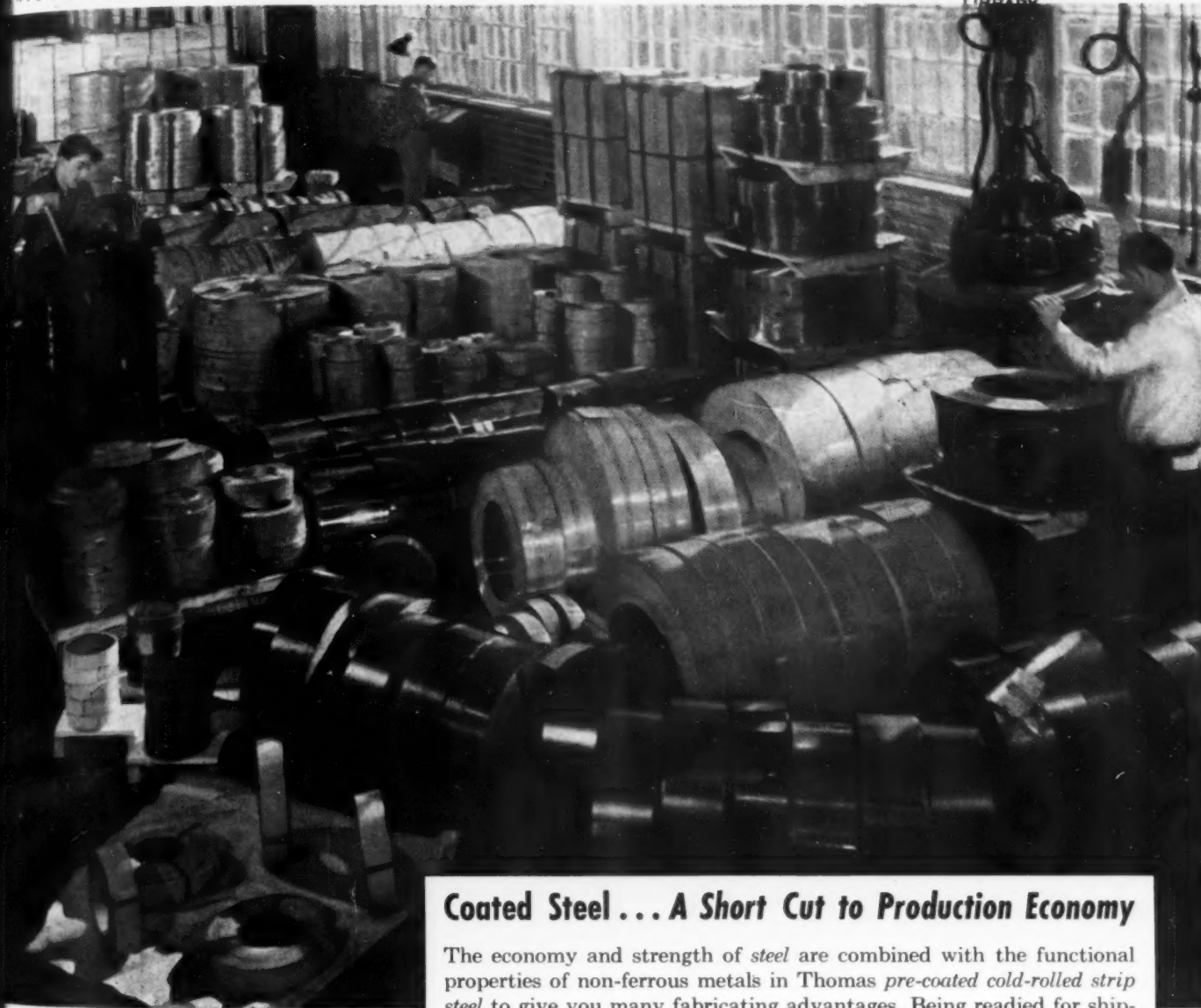
PUBLICATION

The Iron Age

NATIONAL METALWORKING WEEKLY

JUL 30 1953
JULY 30, 1953

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EAST ENGINEERING
LIBRARY

Coated Steel . . . A Short Cut to Production Economy

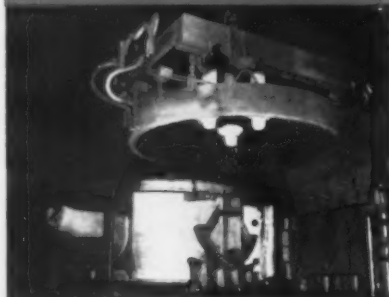
The economy and strength of *steel* are combined with the functional properties of non-ferrous metals in Thomas *pre-coated cold-rolled strip steel* to give you many fabricating advantages. Being readied for shipment here is steel strip electro-coated with zinc, copper, brass, nickel and lead alloy . . . hot dip tin and lead-alloy coated . . . lacquer coated. Write for booklet.

Thomas Strip



Thomas Strip Division
Pittsburgh Steel Company • Warren, Ohio

WHITING
Hydro-Arc
ELECTRIC FURNACES



Hydro-Arc furnace with roof lifted and swung aside.



An "orange-peel" drop bottom bucket fills furnace with one drop.

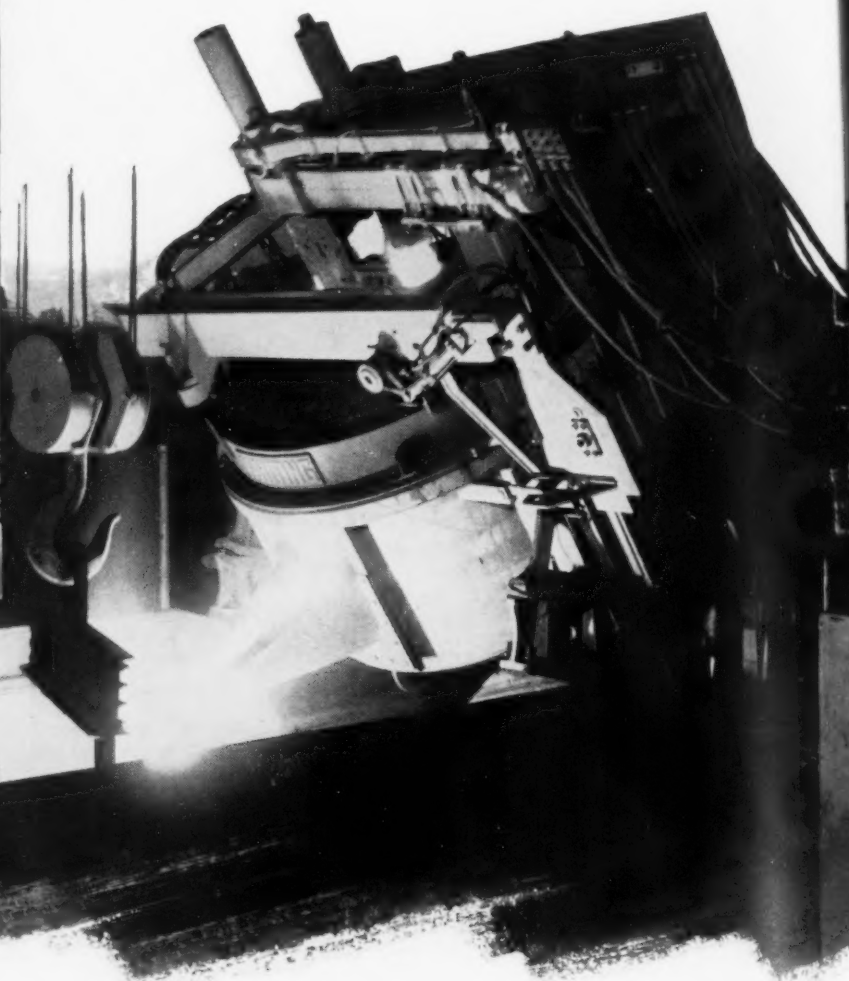


"Business End" of HYDRO-ARC Furnace. Servo Units used to raise or lower electrode arm.

HERE'S THE
"Pace-Setter"
IN ELECTRIC MELTING!

You ask, "What electric furnace offers the most advantages?" The answer is WHITING HYDRO-ARC because of its important, advanced engineering principles! To name a few:

- 1 **The Hydro-Arc Automatic Electric Clamp**, pioneered by Whiting, saves up to 90% of furnace down-time for slipping electrodes. It also means an 8% increase in operating time and production . . . and in addition, the elimination of the hazardous electrode slipping operation.
- 2 **The Unique Hydro-Arc Top Charge**, a load factor improvement, reduces furnace down-time for recharging to only a few minutes. Because of its sound, basic simplicity, limit switches are eliminated and maintenance is held to a minimum.
- 3 **The Hydro-Arc Air-Counterbalanced Hydraulic Electrode Positioning Equipment** assures less electrical energy and electrode consumption as well as improved metallurgical control and longer refractory life.



Write today . . .



for 40 page bulletin FY-168. It completely describes Whiting Hydro-Arc Electric Arc Furnaces!

WHITING CORPORATION
15601 Lathrop Avenue, Harvey, Illinois

ALL BOLTS AND NUTS FROM ONE SOURCE



Did you know there is a Western manufacturer who makes a full line of bolts and nuts? There is—Bethlehem Pacific. What's more, this company produces a full line at its three plants, in Los Angeles, South San Francisco, and Seattle.

The Bethlehem Pacific line includes bolts, nuts and other standard items in hundreds of individual sizes. In addition, special fasteners for unusual applications are also made at each of the three plants.

This set-up provides you with a single, convenient source. It does not matter where you are located, or whether you buy standard or special items, you will find that Bethlehem Pacific can give you fast service.

The quality of Bethlehem Pacific bolts and nuts can't be beat. They are clean, strong and uniform, with smooth-fitting threads. They will please your most exacting customers. Call any of our sales offices and ask for more information.

BETHLEHEM PACIFIC COAST STEEL CORPORATION

Sales Offices: Los Angeles, San Francisco, Portland, Seattle, Spokane, Honolulu

BETHLEHEM PACIFIC

July 30, 1953

*Starred items are digested at the right.

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THE IRON AGE, published every Thursday by the CHILTON CO. (INC.), Chestnut & 58th Sts., Philadelphia 39, Pa. Entered as second class matter, Nov. 8, 1932, at the Post Office at Philadelphia under the act of March 3, 1879. \$8 yearly in United States, its territories and Canada; other Western Hemisphere Countries, \$15; other Foreign Countries, \$25 per year. Single copies, 35¢. Annual Review and Metal Industry Facts Issue, \$2.00. Cables: "Ironage," N. Y.

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NEWS DEVELOPMENTS

STEEL FIRMS PUSH GOOD NEIGHBOR POLICY — P. 33

Steel companies are becoming better neighbors by increasing their community relations efforts. A hitherto unpublished survey shows the growth of steel companies' public relations efforts from 1948 to 1952. The industry is unquestionably putting more time, and effort into meeting its responsibilities than ever before.

NEW TWIST MAKES BACK EXTRUSION PAY OFF—P. 36

Using back extrusion and improved dies, Rheem Mfg. Co. is saving up to 10 lb of metal per shell on 77 lb, 155-mm howitzer chemical projectiles. Technique cuts cost 75¢ per shell, increases production rate. Forged dies of low carbon, high chrome moly steel, triple the life of conventional cast dies, the company reports.

BELGIAN FIRM DEVELOPS NEW DIAMOND WHEEL—P. 37

Need a diamond grinding wheel that won't wind up in the sludge? Cleveland firm says Belgian Tool Co. has one. It's a radical departure featuring a concentrated layer of diamonds electrolytically bonded to brass nub. Claim end to many grinding ills. User grinds 3000 carbide tips per wheel. Old wheels did 300.

COLLEGES ASK INDUSTRY'S FINANCIAL AID — P. 44

American colleges and universities are hoping that industry will give more financial aid. Money is needed for operating expenses and scholarships. Foundations are established to make it easier for industry to offer financial contributions. Court has upheld the legality of gifts to educational institutions.

GUARANTEED WAGES NOT LABOR PANACEA—P. 55

Industry spokesmen have told a congressional committee that the guaranteed annual wage can't guarantee labor peace. Work, pay depend too much on unknowns like future demand, sales. Answer, they say, is to eliminate cyclical unemployment by much greater cooperation between labor unions and management.

FEAR CONGRESS WILL EXTEND RENEGOTIATION—P. 61

Machinery and equipment manufacturers believe 1-year extension of Renegotiation Act is unwarranted. Bill has already passed House and if brought to vote in the Senate, passage seems assured. Vote may be postponed because of legislative log jam. Delay might put industry in stronger position to fight bill.

f the Week in Metalworking

ENGINEERING & PRODUCTION

SAFETY BUILDS MORALE, BOOSTS PRODUCTION—P. 87

Safety takes a lot of planning and is everyone's job. Buick, in taking its ninth safety award, has been outstanding in reducing lost time accidents and the accident severity rate. Many safety devices, sparked by employee ideas, are low-cost items that the small shop can adapt to its own needs.

CABLE LINK CONVEYOR OFFERS FLEXIBILITY—P. 92

Steep incline of a cable link conveyor in and out of a core dipping solution dispenses with the need for core washing. Minimum floor space, lower tank cost and amount of solution are other advantages. Positive slip-proof drive on 4-in. I-beam suspension and standard trolley parts keeps costs low.

ALUMINUM COMES OF AGE IN NUCLEAR WORLD—P. 94

Light weight, good corrosion resistance, ability to bond well with uranium and low rate of neutron absorption make aluminum a highly acceptable material for nuclear reactors. Being nonmagnetic and a good electrical conductor makes it an essential part of the electrostatic generator at Argonne.

NEW PROCESS GIVES UNUSUAL POWDER PARTS—P. 98

Parts with more than usually difficult contours are now being made from carbides and hard-to-melt metals such as titanium and zirconium. Savings in materials and elimination of most machining are featured in this new method. Only compacting and a single sintering operation are involved.

SEMI-AUTOMATIC METHODS SPEED WELDING—P. 102

Use of welding positioners and turning rolls combined with hidden arc welding methods have stepped up welding speed and improved quality. Changeover from hand welding results in less distortion and welds of better appearance. Automatic welding is not applicable because most welds are too short.

NEXT WEEK—NEW COUPLING AIDS ULTRASONIC TESTS

Liquid searching unit combines the advantages of contact and immersion test methods. Crystal wear is practically eliminated and rough surfaces can be uniformly inspected. Results are comparable to immersion method without immersing work. Defects $\frac{1}{8}$ -in. below surface in aluminum are detected.

MARKETS & PRICES

REROLLING FIRM TACKLES THE TOUGH ONES—P. 35

Doing jobs that nobody else wants keeps American Silver loaded with work. Rolling mill hands are not only craftsmen—they're artists. Firm rerolls almost anything, including titanium, tantalum, zirconium, to very thin gages. Tolerances are down to 0.0001 in. Customer list reads like industrial blue book.

PITTSBURGH STEEL COMPLETES EXPANSION — P. 39

Last week's official unveiling of Pittsburgh Steel's new \$28-million hot mill culminated the company's 3-year \$62-million "Program of Progress". Entry into the sheet and strip field was main objective of the program, designed to diversify product mix and better balance ingot and finishing facilities.

DIESELS WIN COMPLETE RAILROAD VICTORY — P. 41

Diesel locomotives have routed steam units from railroads, are now mopping up. Builders fear the price of their victory may be demobilization. They are revamping their operations to fit a declining new order rate. Many are banking for the future on replacement parts and modernization of existing diesels.

AUTO STEEL BUYERS TAKE DRIVER'S SEAT — P. 50

Pattern of steel sales in Detroit is shifting. Demand is still strong but there are soft spots. Automotive buyers won't talk about anything after October. High cost material, conversion and foreign steel are being bypassed at present as cost and quality attract the major share of the industry's attention.

STEEL DEMAND STILL SHOWS PLenty OF ZIP—P. 111

Don't let anyone tell you the steel market has lost its zip. That just hasn't happened—yet. Matter of fact a good many customers are disappointed by the "small" allotments granted by mills for the fourth quarter. This is due mainly to heavy carryovers of undelivered promises from third to fourth quarters of this year.

U. S. SAYS ALCOA-ALCAN DEAL ISN'T LEGAL — P. 114

Once again the Alcoa-Alcan "monopoly" is being aired. Contract for 600,000 tons of Canadian aluminum termed contrary to 1951 court order splitting common Alcoa-Alcan stock ownership. Alcoa feels the deal is okay, says it's based on U.S. market outlook for the future. Reynolds raises pig, ingot prices.



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the
stainless
that does the
best job**

No one stainless steel meets every set of service conditions. And you should not pay extra for special properties you don't need. You can economize too, by selecting alloys especially designed for your fabricating processes.

Crucible produces around thirty standard alloys and many other special types of REZISTAL stainless steel. To help you choose the proper grade, our field representatives are prepared to bring you the latest and most complete metallurgical and fabrication data available on the application of stainless steel. And our plate, sheet, strip, bar, wire and tube mills are equipped with the most completely automatic controls for rolling, annealing, heat treating, finishing and polishing to assure you of unvarying quality in every piece of Crucible REZISTAL.

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Editorial

The Iron Age

FOUNDED 1855

How Far Can We Wander?

PEACE and freedom will be a long time coming to Korea. We and our allies are partly at fault for this. A truce with Communists is something far different than one with free nations. It is—in the long run—less than a scrap of paper.

This Administration inherited the sorry mess in Asia. It is trying to wind it up some way—knowing well that much of what we do flies in the face of our own thoughts and history.

We can't go on to the next step—which will be paved with communistic deceit—without a truce. Our real test of character and national sincerity comes when we face Red China at the "political" negotiations.

Will we then go overboard for British, French, and Indian advice—based on pressure and "angles" that are personally motivated? Or will we stiffen that American spine which has become soft from listening to our "betters"?

In case we falter on the tough challenge to our basic character the following may cause a slight flush on our national face:

¶ We and our allies allowed the Russians into North Korea—Syngman Rhee did not.

¶ We and our allies paved the way for Red control of China by our stupid diplomacy.

¶ We and Britain had the wool pulled over our eyes by Stalin and gave him his chance to double cross free peoples in Asia.

¶ We—through Truman and Acheson—stopped General MacArthur from doing his job. With British pressure pounding in our ears, we fired MacArthur.

¶ We stopped General Van Fleet from winning. We failed to heed MacArthur's "There is no substitute for victory."

¶ We wasted two years of truce talks, allowing the Reds to use us as pawns in their game.

¶ We as a nation were not shocked and distressed when Churchill called Syngman Rhee treacherous.

¶ We have lost the war in Korea in order to end a nightmare—made so by little men.

How far can we wander before we have laid at rest all that 1776 has meant to America?

Times have changed but freedom, sincerity and American integrity should be ageless—and inflexible.

Tom Campbell

Editor

July 30, 1953



Westinghouse

saves in excess of
\$57,000 per year
 by **FORK TRUCK**
HANDLING

● A fleet of fork trucks including Bakers, coupled with intelligent planning and material handling engineering, enables Westinghouse Electric Corporation to cut handling costs more than \$57,000.00 per year at its huge East Pittsburgh works. Savings in which the Baker Trucks participate, include:

- \$12,000.00 warehousing raw materials in the molded materials section
- Another \$12,000.00 handling finished molded products
- \$9,000.00 on one scrap handling operation
- \$7,500 by handling castings on pallets in yard storage
- 100% added storage capacity in molded materials warehouse
- Doubling capacity of drum storage space in yard

These savings were made possible by replacing manual handling and other slow methods with efficient fork-truck unit-load handling. In some instances Westinghouse devised special pallets and containers to achieve greatest speed and efficiency from their versatile Fork Trucks.



Illustrated above is a special stringer pallet which enables Baker Fork Trucks to tier and transport drums four at a time, doubling storage capacity and speeding these operations substantially by eliminating manual methods.

◀ This method of handling scrap saved \$9,000.00 in one year. Driver merely operates controls—the truck does the work.



◀ Handling castings in yard storage on pallets with Fork Trucks saves \$7500.00 per year over former methods—and multiplies storage capacity by tiering.



◀ By palletizing bagged materials for fork truck handling, tiering to warehouse ceiling more than doubles storage capacity. This method cuts handling costs \$12,000.00 per year.



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 a new portfolio of actual case histories.

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The Baker-Lull Corporation, Subsidiary, Minneapolis, Minnesota
Material Handling and Construction Equipment

Baker

industrial trucks

Dear Editor:

Letters from readers

Summer Checkup

Sir:
Enclosed is a copy of the feature page of our little library publication called the "Newsletter." THE IRON AGE with the editorial "Summer Checkup" arrived when we were needing just such an article for immediate use. Sorry to have taken the privilege of using it without first asking your permission, however, we felt quite sure you wouldn't mind.

Many favorable comments have been received and I firmly believe that from now on your editorial page and possibly all of THE IRON AGE will be read by more of our employees.

H. K. HEDRICK
Technical Librarian

Houdaille-Hershey Corp.
Highland Park, Mich.

Die Lubricant

Sir:
Please send us some information on the source of the diecasting lubricant mentioned on the Newsfront page of the June 4 issue.

R. D. McGILVRA
President

Product Engineering Co.
Portland, Ore.

Further information on the diecasting lubricant may be obtained from Dow Corning Corp., 592 Saginaw Road, Midland, Mich.—Ed.

Cold Extrusion

I would appreciate very much if you would mail me six copies of the article, "Cold Extrusion Conference Outlines Industry Progress, Needs," which appeared in your June 11 issue.

J. Y. BLAZEK
Executive Vice-President

Lemco Products, Inc.
Bedford, Ohio

Salt Bath Control

Sir:
Please send me two copies of the article, "Control of Salt Bath" which appeared in your May 31 issue.

R. J. ZALE
Metallurgical Engineer

Firth Sterling Inc.
Pittsburgh

Prestressing

Sir:
We are interested in obtaining a copy of the article entitled "Prestressing—Will Bars Boost Use?" which appeared in your publication of Oct. 16, 1952.

S. HANSROTH

Firth-Hand & Co., Inc.
Washington

Flameproof Clothing

Sir:
I refer to the article on safety in the July 9 issue, p. 75.

Could you give me the name of the manufacturer of special heat reflecting, heat resisting coats.

J. C. HEYMANN
Metallurgist

Corning Glass Work
Corning, N. Y.

The manufacturer is Trusdale Laboratories & Textile Processing Co., Pittsburgh, Pa.—Ed.

Austenitic Stainless

Sir:
I would like you to send me tear sheets of the following articles if they are still available: "How And Where To Use 430 Stainless," Feb. 26, 1953, and "New Austenitic Stainless," Mar. 12, 1953.

J. L. GEORGE

Physical Metallurgy Div.
Canada Dept. of Mines & Technical Surveys
Ottawa, Ont.

Nuclear Reactors

Sir:
I am interested in securing a clip sheet or reprint copy of the following article which appeared in your Mar. 13, 1952, issue: "Wanted: Better Materials For Nuclear Reactors."

W. J. GRAFF, JR.

Oak Ridge, Tenn.

Metals For Tomorrow

Sir:
We would appreciate having three sets of reprints of "Metals For Tomorrow" which appeared in your Oct. 9, 1952 issue.

D. B. GRANT
President

Electrolizing Sales & Tools, Inc.
Los Angeles

Metal Finishing

Sir:
Please send us tear sheets of "Metal Finishing," Feb. 26, 1953, p. 132, and "Variable Speed Unit," Apr. 2, 1953, p. 132.

R. A. CASKEY
Librarian

Proctor & Schwartz, Inc.
Philadelphia

Cold Treating Metals

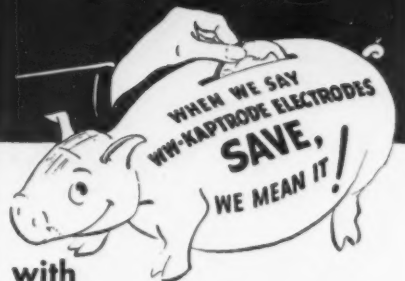
Sir:
Will you please send us a reprint of your article on low temperature treatment from your May 28 issue, p. 121.

F. A. BUNDY
Purchasing Agent

Chicago Telephone Supply Corp.
Elkhart, Ind.

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- TIME • MAINTENANCE
- ELECTRODE COSTS



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The new WW Kaptrode Electrode is a small cap type electrode which fits into a semi-permanent Kaptrode Adapter Shank. This in turn fits into any standard Morse taper type holder of appropriate taper size. The entire assembly makes a highly efficient water-tight and electrically-efficient unit.

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- INVENTORY SAVINGS—30% and up; only small supply of shanks needed; electrodes are interchangeable; one shank with proper care should outlast ten or more.
- TIME SAVINGS—Kaptrodes quickly, easily inserted and removed.
- MAINTENANCE SAVINGS—in majority of cases, the Adapter Shank may be left permanently in the holder, saving maintenance and changeover time.

For the toughest electrode-consuming job in your plant, order a supply of WW-Kaptrode Electrodes NOW!

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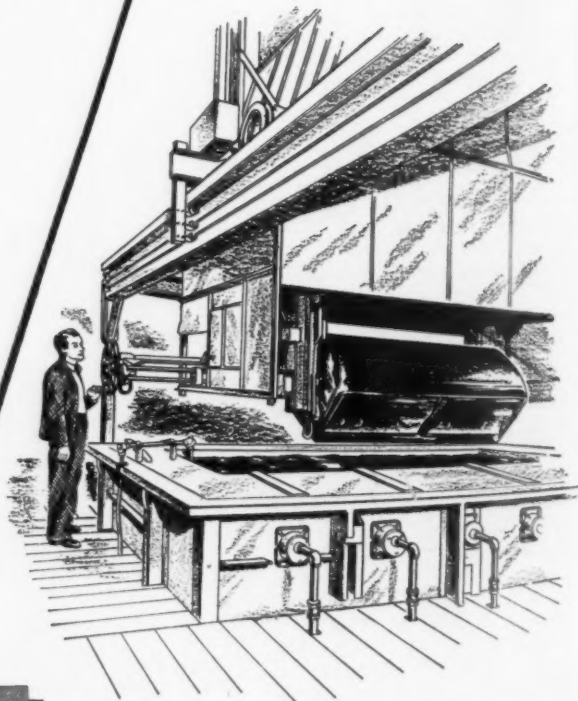
LENGTHENS POT LIFE

Uniform and controlled application of radiant heat has added years to the life of this galvanizing pot. Maximum temperature in this gas-fired, radiant-heated chamber is only 1200° F., contrasted to 2200° F. in front of the impinging flame of the burners used previously. A bath temperature held to a variation of five degrees results in finished work which meets U. S. Navy requirements.

This is only one example of **ihp*** benefits, which carry across all lines of metalworking. Equally good results are commonplace in ferrous and non-ferrous heat treatment, brazing, soldering, forging, extruding, melting, enamel baking and other processes.

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Fatigue Cracks

by William M. Coffey

Puzzlers

The pilot must fly due South for $\frac{1}{2}$ an hour to pick up the balloon again (July 2 puzzler), and the winners: Keith Hebble, Alvin A. Karolek (ffj means "favorite family journal"); James Chavala, K. A. Matticks, Edwin J. Montgomery (Bear off, will 'ya, Mr. Ward. OK, there's no true answer to splitting up that six bucks. OK, OK.). John Hershey, Andy Lynch and Doildeen French.

... and the answer to the car puzzler is that the slower car must have a 3-hour start or 144 miles. Winners: Raymond Robinson, Keith Hebble, Tom Slanger, Doildeen French and Andy Lynch, A. J. Reardon, William Phillips, E. E. Phillips, Stanley Bey, Joseph Darby, Mr. Lobbenberg's daughter, and Wm. E. McCord.

Vacation

You try to get away for a few days for a vacation, earned or otherwise, and all kind of things happen. You get insulted, for one thing. Did you notice this column last week? You'll find a masterpiece of smart writing, very poorly illustrated, but still just the style of brilliant wit this column has needed since October last. Needless to say, it was not written by us. A beaucups more of these and we can get off the hook for good. But we need your help. So will everybody please send to the Editor¹ of this magazine the following postal card which we'll² happily supply:

Amigos:³

This is to inform you that I was just about to drop my subscription to your magazine until I read *Fatigue Cracks* in the July 23rd issue. It was a superb treatment of what before has been a barren, dull mess — a complete void, III. n. I. An empty space, a vacuum. I will continue my subscription only upon complete assurance from you that the author of July 23rd remains on the job.

We⁴ have multigraphed 35,660 of these cards, one for each of our subscribers. One will be mailed to you. Will you kindly sign and return. We⁵ pay all postage. Please rally around. Gratefully, W. M. Ovaltine⁶.

A little vacation, mind you, just one week from home, and the only place at the Ovaltine Villa⁷ where

we now have grass is on the flagstone patio. Topping an inch of solid flagstone which rests on 12 inches of sand, which in turn is based by 14 inches of rocks, pebbles, cinders and solid granite clear to China is lush, beautiful green grass, the only place around where the wife will still walk barefooted. The rest of the White House lawn is not at all fit for egg rolling, being rusty brown fuzz and THAT rests on 12 inches of rich top soil (cost, \$314.86) and good, black loam also clear to China. The perversity of nature, illustrated below:



You can easily see why we belong to Exercisers Anonymous.

Another item picked up on our return comes from Publicity Man Eliot Stark, who in his day has handled everything from selling advertising space on pretty knees (in the days of short skirts) to Tibetan actresses. Eliot is now handling Charlie, The Human Fish — Charles Kayton, 21, from Queens, N. Y. *The Fish* is going to swim the English Channel, but first is giving the Hudson River a chance from Albany to New York City in 10 mile stretches. A great distance swimmer, Charlie's reply to "what do you think about when you're doing all that swimming?" is "Girls, just girls. All I think about is girls."

New Puzzler

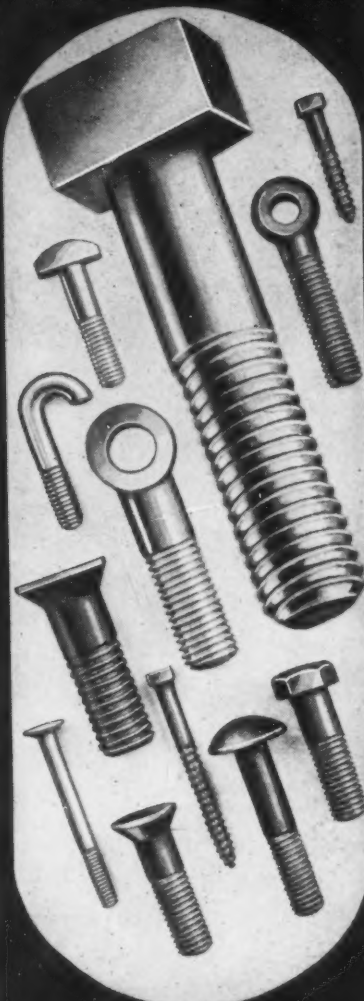
A spider is sitting in one of the corners of the ceiling of a room 20 x 40 x 10 ft. He wishes to reach the corner diagonally opposite on the floor. What is the shortest distance he can crawl between these two points?

¹ Yucca Kid
² Meaning "me"
³ Spanish for Messures (fr.)
⁴ w/cream or straight drip
⁵ Spanish for Pension (fr.)

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TEE BOLTS

by an exclusive method



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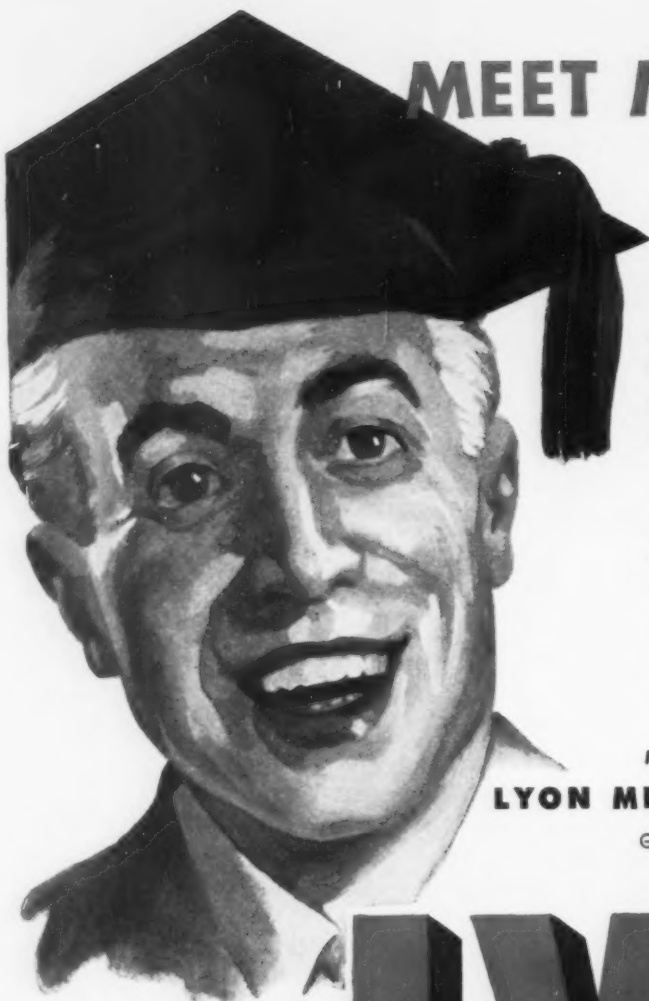
Pawtucket tee-head bolts are made in standard sizes $\frac{1}{4}$ " and larger, or to your specifications. In any size, you can depend on a uniform Class 3 fit, if required.

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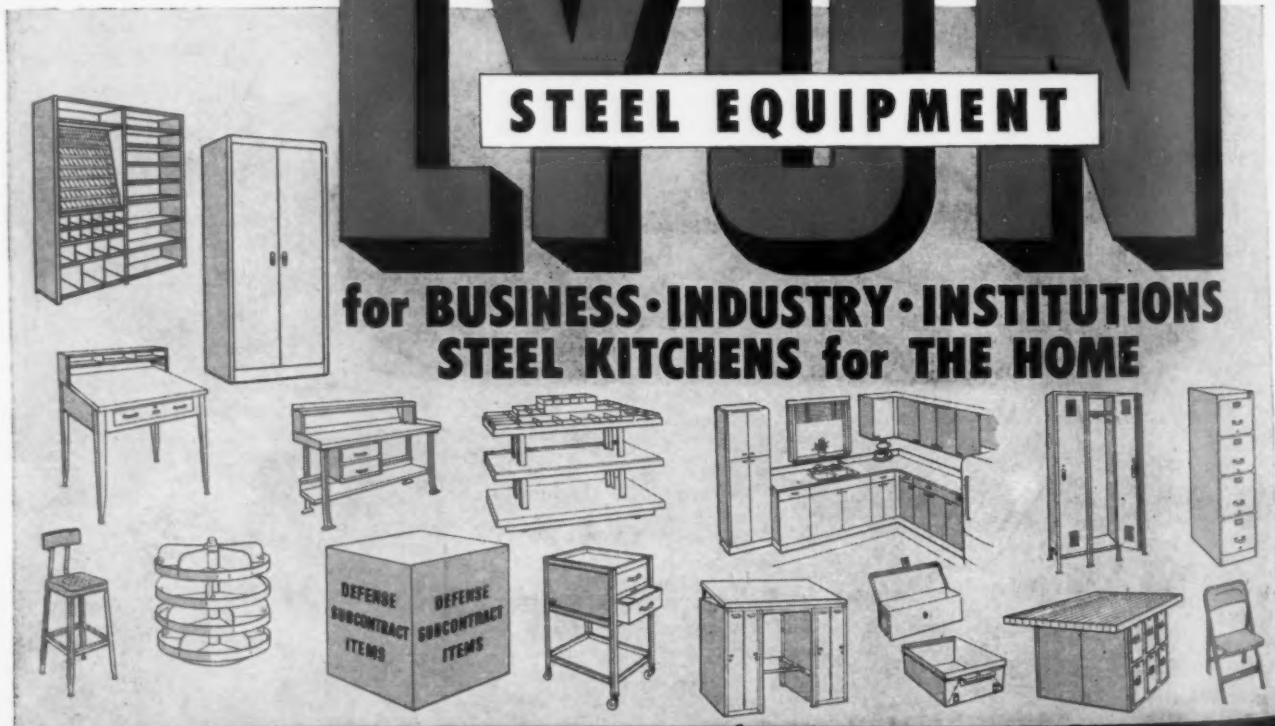
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| • Bin Units | • Drawing Tables | • Parts Cases | • Wood Working Benches | • Hanging Cabinets | • Bench Drawers | • Hopper Bins | • Shop Desks |

STEEL: Pushes Its Good Neighbor Policy

More and more time, effort, money are being expended to improve employee and community relations . . . Efforts are well organized . . . Programs are far-reaching, growing.

Steel companies are becoming better neighbors. But not without a great deal of attention and effort. There is no question that they are trying harder than ever before to meet responsibilities of employee and community relations.

They are tackling the job through organized communications programs, joint meetings with civic-minded residents, open houses, and other time-tested activities.

Growing scope of their good neighbor policy is shown by a comparison survey conducted for American Iron and Steel Institute in 1948 and again in 1952. Survey covers company members of AISI.

The 72 companies included in the survey account for more than 90 pct of finished steel produced in the U. S. They are located in about 200 communities in 24 states accounting for 78 pct of the country's population. Altogether these companies employ more than 900,000 workers.

Here's what they are doing to become better neighbors:

Education . . . is an opinion molder. Guided by previous studies of industry cooperation with schools, steel companies are showing greater interest in plant-town schools. They are seeking ways to (1) offer their resources to educators, and (2) improve cooperative efforts of the past to better serve needs of teachers.

Twenty-six steel companies met with plant-town educators in 1952 to become better acquainted with each other's problems and responsibilities. Thirty companies arranged teacher or student tours of

the plant to meet specific educational requirements.

Cooperation With Schools

Companies Providing	Number		Increase
	In 1948	In 1952	
School Materials	28	55	27
Guest Lecturers	14	42	28
Scholarships	21	38	17
Money, Equip.	20	39	19

Good Community Relations . . . require good citizenship on the part of companies and their em-

Better Citizenship

Number of Companies	Number		Increase
	In 1948	In 1952	
Employees Join Civic Groups	14	61	47
Donate to Local Charities	18	67	49
Made Plants Prettier	16	67	51

ployees. Here's what steel companies are doing about civic responsibilities:

(1) Sixty-one of the companies surveyed in 1952 encourage employees to participate in civic, service and charitable activities.

(2) Financial contributions to community groups, ranging from

\$1000 to more than \$100,000 were made by 67 steel companies.

(3) Not overlooked in steel's \$5-billion expansion and modernization program since 1947 is plant beautification and elimination of nuisances.

Press Relations . . . aid the good neighbor policy by giving information about the company through the local press. Steel people know that community residents place great reliance on their newspapers. In 1952, 59 companies issued releases regularly at an average rate of about 7 per company per month on specific news topics. Wider use of pictures was made since 56 companies maintain photo files.

To make company statements more meaningful and to personalize press relations, 20 companies in 1952 held press conferences, 32 invited members of the press to tour plant facilities, and 38 invited them to be guests at special plant events.

Public Speaking . . . is growing fast; in 1952, 48 top officials (pres-

Steel's Community Relations Progress

1. Majority of companies are cooperating with educators by supplying requested information and other assistance in plant-town communities.
2. Efforts to keep the community informed about company and industry matters have increased greatly; talks before community groups have increased threefold.
3. More than 42,000 audiences viewed 100 films from 39 companies in 1952.
4. Since 1948 almost 500,000 visitors have attended open houses held by 35 companies—in addition to other thousands who periodically visit plants.
5. Number of employee publications has doubled.
6. Supervisor-employee meetings have increased fourfold.
7. About 60 pct of the companies now have either their own public relations departments or full-time counselors.

Special Report

idents or chairmen) addressed 245 national, regional and local audiences.

Probably even more significant, however, has been the increase in speaking by lower echelons of steel management. In 1952 a total of 650 speakers from 66 steel firms addressed more than 3000 community audiences.

Steel People Speak Up

	Number of Companies		
	In 1948	In 1952	Increase
Top Official Spoke	18	48	30
Talks Given	55	245	190
Companies with Speakers	29	66	37
Number Speakers	210	650	440
Number of Talks	900	3065	2165

Local Newspaper Ads . . . are being more widely used to keep the community informed about the company. Last year 35 companies talked over subjects of mutual interest with the community through 275 full-page ads, 410 half-page ads and hundreds of smaller ones. This does not include product or classified advertising. Nor does it include any industry-wide campaigns.

Four companies are now using a community newspaper regularly to publish news stories and pictures about the company and its employees—and what they are doing of special interest to the community.

More Companies Use Radio

	In 1948	In 1952	Increase
Number of Companies	10	19	9
Regular Programs	5	22	17
Special Broadcasts			

Films . . . about the steel industry are gaining in number, quality and acceptance. In 1952, 39 steel companies had 100 films which were shown to more than 42,000 audiences.

Booklet Distribution . . . by mail was made by 41 steel companies to some 300,000 people last year.

Plant Visits Are Growing

	Number		
	to 1948	'49 to '52	Increase
Plant Visits			
Plant Tours	55	68	13
Open House	11	35	24
Number Attending	100,000	465,000	365,000
Product Exhibited	9	29	20
Told Economic Story	4	15	11
Souvenirs, Refreshments	6	29	23

Also, presidents of 24 companies wrote one or more letters to community leaders supplying personal

reports on subjects of joint concern to companies and neighbors.

Employee Publications . . . are used as regular and continuing channels of communication with employees. Number of such publications doubled in the 4 years between surveys.

Employee Publications Double

	In 1948	In 1952	Increase
Number of Companies	22	43	21
With Emp. Pubs.	11	25	14
Full-Time Editors	9	25	16
Mailed to Homes			

Employee Letters . . . always get high rating in surveys of what workers like and don't like. Employees like these letters because they give them a personal feeling of belonging. Here's what steel officials are doing to fill this want:

Letters to Employees

	In 1948	In 1952	Increase
Number of Companies	22	40	18
Periodic Letters	4	7	3
Employee Newsletters			

Issue More Special Booklets

	In 1948	In 1952	Increase
Number of Companies	22	32	10
Employee Handbooks	32	49	17
Timely Topics			
Annual Reports	20	33	13
(to employees)			

Supervisory Communications . . . are being extended through more foremen's newsletters and meetings, in an effort to bring them closer to top management and supply information they need to become better informed spokesmen.

Communicating With Foremen

	In 1948	In 1952	Increase
Number of Companies With:			
Supervisory Newsletters	7	29	22
Foremen's Meetings	40	66	26

Foremen-Employee . . . relations are one of the most striking examples of progress in employee communications. In 1948 foremen in only seven companies held meetings with employees at least

once a month. Four years later such meetings were being held in 29 companies. Moreover, nine companies conducted special economics courses.

Organizing the PR Job

	In 1948	In 1952	Increase
Companies With:			
Public Relations Depts.	14	30	16
Full-time Employees	246	387	141
Regular PR Counsel	6	11	5
Either PR Dept. or Counsel	20	41	21

Thirteen of the 30 public relations departments report to the president or a vice-president; 8 report to director of industrial relations, 7 report to or jointly with the advertising director, and 2 report to the board chairman.

Public Relations:

U. S. Steel's cleaning plant ends steelmaking nuisances.

U. S. Steel Corp.'s new ferromanganese cleaning plant at its Duquesne Works is further evidence of the industry's desire to get along with its neighbors by eliminating the so-called "nuisances" of steelmaking.

Result of an extensive research program on a pilot plant basis, the cleaning plant was built by Research Corp.

Pays Two Ways

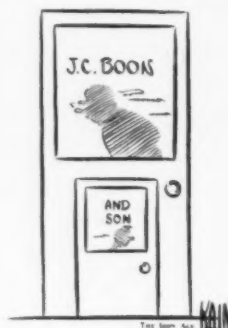
A bank of five electrostatic precipitators with a combined capacity of 135,000 cfm will remove 98 pct of all dust and fumes created by ferromanganese furnaces.

At the outset, the only benefit to the company will be improved public relations in the plant community. But more tangible results may accrue later on, through recovery of ferromanganese.

After dust has been removed from the gas, the captured solids are carried by screw conveyors into five rotary pyrophorizing kilns. The floury dust is moistened by a trip through five continuous mixers and two batch type mixers.

Then it is formed into pillow-shaped briquettes in two briquetting presses.

The briquettes, containing about 14 pct manganese, will be stored until a practical method of recovery has been developed.



ROLLING: Firm Likes "Tough Jobs"

Recently add titanium, tantalum, zirconium to catalogue . . .
Roll strip to ultra-thin gages, close tolerances . . . Mill hands
work like artists—By R. L. Hatschek.

You generally don't consider a rolling mill hand to be a craftsman. But as you watch over the shoulder of this one your impression is that he is not only a craftsman but almost an artist. He works for the Industrial Div. of American Silver Co. and his job is precision rolling of strip on a Sendzimir mill.

The strip is the story. Despite the firm's name, the metal usually isn't silver—it may be almost anything. And the rolling is done to ultra-fine gages, with tolerances as close as ± 0.0001 in.

Tough rolling jobs are the company's stock in trade. Latest additions to the catalogue are tantalum, titanium and zirconium. Rest of the list includes metals and alloys like beryllium copper, Inconel, stainless steel, Haynes Stellite, molybdenum, precious metals and clad metals of several varieties.

Plan New Equipment

Equipment includes precision 2-high and 4-high rolling mills as well as the small planetary-roll Sendzimir mill. Several controlled atmosphere continuous annealing furnaces are used between cold-rolling operations.

As soon as demand for metals like titanium warrants it, the firm plans to install a vacuum annealing furnace. Facilities scheduled for early installation include an overhead trolley crane and a more complete metallurgical laboratory.

American Silver's beginning was in production of metals for the jewelry and optical industries. That's where the firm got its background in precision. But jewelry is a seasonal business. By branching out into the production of industrial products the company has been able to spread out its overhead costs and capital investment. This has permitted a substantial

Happy Coincidence

American Silver Co. actually got into the titanium business from a coincidence. Place was the cafeteria at last year's Metal Show in Philadelphia. Company President Monroe Sherman happened to sit down at the same table with T. W. Lippert, former IRON AGE editor, now manager of sales and technical services for Titanium Metals Corp. of America. They chatted. Mr. Lippert mentioned difficulties. Mr. Sherman was interested. Result was a natural.

lowering of jewelry metal prices. Prices for thin-gage close-tolerance industrial strip appear high. But they are based on realistic cost figures in which labor plays a significant role.

Another factor is that many orders are for very small quantities—some inquiries come in for less than 1 lb. This would be okay except for the fact that the rolling mills can't be set up with less than 1 lb of metal. Scrap loss may often run as high as 50 pct, in some cases it may be several hundred

per cent. And when the metal is a high-priced one like tantalum the cost can really run up.

If thin strip were sold on a footage basis rather than a weight basis the price would also look a lot more favorable. A pound of stainless steel strip 8 in. wide rolled down to 0.0005 in. thick is 76 ft long. Considering most of the uses for such material, this will make a lot of parts.

Electronics a Big User

What are some of the uses? In many cases the people at American Silver never know. They just get a set of specifications to follow. Often the end use of the strip is top secret.

The growing electronics industry, with its trend toward miniaturization, is a big customer. Tantalum foil is used in capacitors. Precision tantalum is used for electron tube shields. Metering equipment, aircraft instruments, communications equipment and chemical processing equipment all create demand for close-tolerance strip of these "new" metals.

And since these metals are so new to the industrial scene, American Silver is getting into the field early. The firm's management foresees vast growth in the demand for such materials.

Roster of customers reads like the blue book of American industry. They seek out American Silver for the tough jobs that tonnage mills don't like.



TOUGH ROLLING JOBS are a specialty of American Silver Co. In this photograph, titanium, one of the hard metals recently added to the company's catalog, is being rolled.

SHELLS: Old Method, New Twist Pay Off

Using back extrusion and improved dies, Rheem Mfg. Co. is saving up to 10 lb of metal per shell . . . Cuts cost 75c per shell . . . Production increased—By T. M. Rohan.

An old idea in shell forging is getting a new twist and making money these days.

Using back extrusion and improved dies Rheem Manufacturing Co., Richmond, Calif., is saving up to 10 lbs of metal per shell on 77-lb, 155-mm howziter chemical projectiles. In cash the technique saves about 75¢ per shell. Although not divulged, production figures have also been increased. Forged dies of low carbon, high chrome moly tool steel, are giving triple the life of conventional cast dies.

Back extrusion—in which the slug oozes up around the punch—was used as early as World War I for shell making, but it was comparatively slow. Without the "push" from accumulators, power taken directly from pumps was limited. The slow travel limited production and aggravated die wear.

Rheem has obtained forming speeds up to 350 in. per min. Forging is done on first two commercial shell making models of an 800 ton Lake Erie press with inert nitrogen at mosphere in an hydraulic oil accumulator. Floating pistons give added bottom-of-the-die power. Billets are automatically handled from heating furnace through both punching operations, then bottom discharged.

The forging process was developed by John Filson, Rheem forging engineer, primarily to save on higher cost western steel. This saving was a must if Rheem was to stay competitive with 17 others from the South, East and Midwest in the 155-mm program.

The forged dies are considerably costlier than cast types and require much babying through a variety of tool and die and machine shops. But after some polishing, over 30,000 pieces have been run on the extruding punch

portion and 80,000 on finish inserts on smaller 81-mm mortar shells. It has been used on these for over a year. Normal life on cast punch dies is about 3000-5000 pieces and on finish inserts about 15,000. Comparable die life is expected on the 155-mm size just started.

The two new \$200,000 presses have 800 tons maximum pressure available instantly off two 150-hp motors and pumps with the accumulator. The 350 in. per min travel compares with 100 to 150 in. on conventional presses.

This puts the new units almost in the hammer class but within close press tolerances of 0.0010 in. which pays off in metal and machining saved. Coupled with back extrusion, the billets have been held down to a "dream" size of 110 lb with about 120 lb average as against about 130 lb by conventional pierce and draw.

The forged dies are made of Bethlehem's Cr-Mo-W at neighboring Moore Drydock Co. In forging them on a 1500-ton press, work is continually done around the mandrel so that the die is densest at points of greatest wear. This is done in two heats at 2050-2150F.

Forgings are then reheated to annealing temperature and placed in Sil-O-Cel insulating material for a slow anneal of 10-14 days.

Attention Executives

There is a message for you each week in THE IRON AGE'S Report to Management. Crammed with easy-to-read information on the most recent business and industrial trends, Report to Management is designed to help your planning in the face of rapidly changing economic conditions (see p. 63).

This removes all forging strains, forming a homogeneous structure for better machining. Long tempering is essential if dies are to withstand the sidewall pressure of about 500 tons in the press.

Steps in forging the shells are:

- 1) Billets electric-arc nicked and broken;
- 2) billets heated to 2250-2300F in gas-fired rotary furnace;
- 3) billets squeezed from 5½ in. round cornered squares to almost round in sizing press;
- 4) billets hydraulically de-scaled at 2000 psi;
- 5) billets pierced 6 in. to establish concentricity, then punched 22 in. deep with about 5 in. inside diam;
- 6) rough shells to 175-ton vertical draw press by automatic manipulator;
- 7) to retarded cooling conveyor which controls cooling for best machining properties.

Rheem started full production last week after several weeks work with outside-made billets to iron out production bugs pending installation of the new presses.

The firm currently holds about \$8.5 million ordnance contracts. It is the largest 81 mm mortar shell projectile maker in the U. S. having turned out over 4 million in the last two years.

The smaller 81 mm shells are made by hot cupping and cold drawing using three drawing operations in one press (THE IRON AGE, July 17, 1952, p. 167, and Sept. 4, 1952, p. 152). The San Pablo plant has also been in production of 3-in., 50-cal. and 5-in., 38-cal. Navy cartridge cases for a year and a half.

Spiral wound shell cases are soon to be made from 2½ in. steel strip at Rheem's Chicago and Sparrows Point plants plus jet engine containers. The cases expand on explosion then contract for removal from the breech. After firing, cases are discarded and bolted-on bases reclaimed.

Research on ordnance manufacturing and automatic gun loading fixtures is carried on at the Phila-

DIAMONDS: New Wheel Looks Good

Belgian firm comes up with radical grinding wheel . . . Ends many earlier problems . . . Diamond layer electro-bonded to brass . . . Users report long life—By R. M. Lorz.

Philadelphia plant. The Downey, Calif., plant is entirely aircraft and guided missile subcontracts, principally rocket pods, noses, accumulator tanks and fuel tanks.

Regular commercial lines and/or ordnance are turned out at the plants in Richmond, Southgate and Newark, Calif., Houston, New Orleans and Burlington, N. J.

Rheem's basic line is steel drums in which it leads U. S. production and containers of various types which together account for 60 pct of the business. This line, plus Wedgewood stoves, hot water heaters, coolers, evaporators, clothes dryers and pails makes Rheem one of the biggest sheet users on the coast.

It also makes Bethlehem Steel the biggest hot-rolled sheet shipper to the West. Bethlehem owns about 24 pct of Rheem stock which it got in 1944 in exchange for the Atlas Steel Barrel Co. of Bayonne, N. J. plus later investments.

On July 1 Rheem took over the hot water heater division of Seidelhuber Iron Works at Seattle to get a manufacturing foothold in the Pacific Northwest. It will make heaters and also probably put in a drum line for the refineries being built there to handle output from the new Edmonton, Alta to Vancouver B. C. pipeline.

And the rapid expansion is paying off. Rheem last week announced net profit for first six mos. of \$2.7 million or \$2.04 per share, just a shade under doubling last year's like period of \$1.03 on \$1.5 million profit.

Remove Diamond Quota Limits

Office of International Trade announced last week that due to an improving supply of industrial diamonds, quota restrictions will be removed for the rest of '53.

This relaxation does not apply to diamond crushing bort, dust, powder, and grinding compounds. It does apply specifically to: Rough cuttable diamonds, diamond bearings, diamond discs, tools incorporating industrial diamonds, and rock and core drill bits and reamers using diamonds.

Looking for a diamond grinding wheel that won't wind up in the sludge? Ohio Metal Working Products Co. of Cleveland says it can solve your problem if you are grinding carbide tips and dressing out costly bort with a carborundum stick.

The Ohio firm claims the solution to the problem can be found in a new electro-nickel non-porous bond diamond grinding wheel made by the Belgian Tool Co. near Brussels.

Eliminates Many Disadvantages

The wheel is a radical departure from resinoid and sintered metallic wheels now in use. It features one highly concentrated surface layer of diamonds electrolytically bonded to a brass nub. Manufacturers say electrolysis results in a permanent marriage of nickel and brass which actually holds bort together and keeps it from being pressed into the wheel.

Elimination of porosity and achievement of a really secure bond does away with wheel loading, dressing, and costly collection systems. It also greatly reduces the

possibility of damage from careless handling and gouging.

If the new wheel is everything European diamond experts say it is, manufacturers in this country can put it to good use provided the cost is also right.

Last 10 Times as Long

One company grinding triangular carbide inserts reports these results: Firm purchased several 170 grit wheels measuring 6 x 3/4 x 1 1/2 in. Using a copious oil flow recommended by the government for wet grinding this user managed to reduce cost per tip from 6.75¢ to a little less than 3¢.

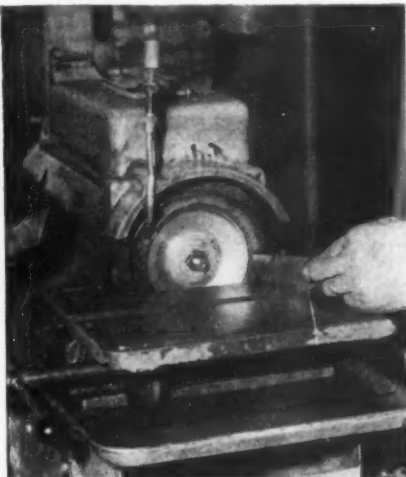
These figures were based on grinding of over 3000 tips. Before switching to the new wheel, this firm reported average wheel life of only 300 tips.

Another user backs up the manufacturer's claim that this wheel has more uniform grit size which results in a better finish and longer tool life. Initial cost of about \$90 for the 170 grit wheel also compares very favorably with cost of other wheels. The new bonding process also insures faster cutting and greater savings on hourly rated job applications.

Can Triple Facilities

At the present time there are about 200 of these wheels in use in this country. Air shipments are arriving daily from Belgium and there is no worry about inability to meet future demand, officials of the Belgian firm say.

Paul Herz, president of the Belgian Tool Co., says he can double or triple production facilities with ease. How about making the new wheels in the U. S.? Unfortunately there just isn't enough bort available to producers in this country to permit any significant production.



NEW electro-nickel non-porous diamond grinding wheel developed by Belgian Tool Co. has longer life, users report.



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TO SERVE BETTER AND LONGER**

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**MANNING, MAXWELL & MOORE, INC.
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Production

STEEL:

Lone Star starts integrated production making oil pipe.

Lone Star Steel Co., near Longview, Tex., has begun integrated steelmaking operations on a limited scale as the first oil field casing ever produced at the plant from local East Texas iron ore came off the production line recently.

The company's No. 1 pipe mill was tested several weeks ago and since then has been turning out steel pipe for oil field use from purchased skelp while breaking-in operations continued.

First Production

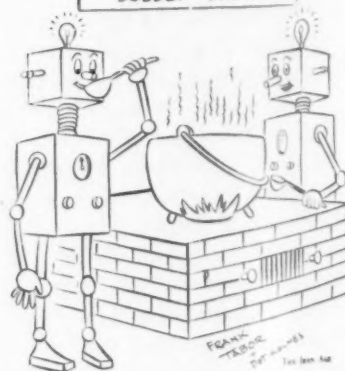
The No. 2 open hearth furnace was put into operation early in June and has turned out 20,000 tons of ingots.

Lone Star's No. 3 openhearth is also operating and two more openhearth go into production soon.

The company's slabbing mill went into production on a limited basis on July 2, and its four-high mill has test-rolled its first sheet of steel which was carried right on through the No. 1 pipe mill to complete the company's first integrated operations.

When construction and tests are finished, Lone Star expects to turn out 400,000 tons of tubular goods for use in nearby oil fields. Employment will hit 3000.

**AJAX ALLOYS, INC.
SOLDED DEPT.**



"Do you think it needs a little more tin?"

STRIP: Mill Climaxes 3-Year Program

Pittsburgh Steel's new \$28-million hot mill culminates its \$62-million expansion program . . . Gives better market position, diversified product mix—By W. V. Packard.

Pittsburgh Steel President Avery Adams is in a happy frame of mind. When he started his "Program of Progress" at Pittsburgh 3 years ago he never dreamed that its completion would coincide with market developments to make him look like an unerring swami.

But that's just what happened. His company officially entered the steel sheet market last week—by taking the wraps off its \$28-million hot mill—at the very time conversion business was fading.

Completion of the hot sheet mill marks the turning point in the company's expansion program, which will be completed when the adjacent cold-rolled sheet mill starts turning out large tonnages early next year.

Finishing Facilities Maladjusted

Entry into the sheet and strip market was the number one objective of the company's expansion program. Aim was to overcome wide fluctuations in production, employment, and earnings resulting from unbalanced and inflexible productive capacity.

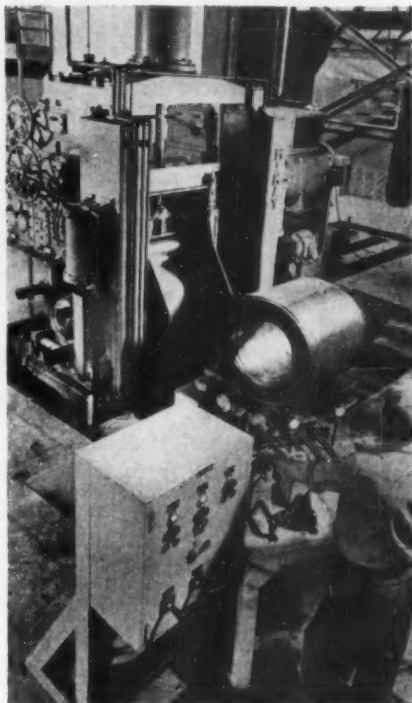
Management analysis of company operations 3 years ago pointed to two major weaknesses:

- (1) Finishing facilities were not adjusted to market demand for relatively more profitable products.
- (2) It was not possible to capitalize on sudden changes in demand because finishing facilities were less than ingot capacity.

Dip Too Far

Blast furnace capacity was too big in relation to openhearth. And openhearth capacity was too big in relation to finishing facilities.

Result was that while well balanced producers continued to operate close to 100 pct of capacity when the conversion market fell



COILS of sheet steel start through the pickle line at Pittsburgh Steel's plant in Allenport, Pa.

off, Pittsburgh Steel's operations dropped to around 70 pct of capacity. And when the industry rate dropped to 70 pct, Pittsburgh could expect to sink to about 46 pct.

What They Did

Analysis of markets for wire and seamless tubular products, which the company already produced, indicated comfortable demand. But, to diversify product mix, decision was made to enter the sheet market where long term projection showed more demand.

Mr. Adams candidly adds, "Our study indicates that if we did not enter the sheet and strip market we would never be a real factor in the steel industry."

Here's what the program consisted of:

- Increase blast furnace capacity 12 pct.

- Increase openhearth capacity 48 pct.

- Install new blooming-slabbing mill to handle increased openhearth output.

- Increase finishing facilities 82 pct, including 66-in. hot and cold-rolled sheet and strip mill.

- Cost of program: \$62 million.

Product range was further diversified by acquisition of Thomas Steel Co., a successful, nonintegrated specialty strip producer.

He's Optimistic

Mr. Adams takes no credit for crystal ball predictions that the conversion bloom would fade at the precise time Pittsburgh Steel's expansion program would bring it into the sheet business. But he's awfully glad his company is prepared to cope with a market that would have dealt it a severe blow in the past.

"If commitments already made for hot and cold-rolled sheets are not canceled, we have no concern about the sale of our first year's production."

He holds an optimistic view of operations in the second half: "Right now the market generally is becoming more competitive . . . (But) new orders have been keeping pace with shipments . . . Forecast for third and fourth quarter totals 51 to 52 million tons . . . This means operations will continue at rate of approximately 94 to 95 pct of operating capacity."

Make Electric Power Available

Power generated at the projected New York-Ontario hydro-electric plant on the St. Lawrence river is to be made available to all nearby states.

This important condition was set by the Federal Power Commission recently in granting New York state a 50-year license to build a hydro-electric dam in the International Rapids section of the St. Lawrence.

License permits New York to build the Long Sault dam near Massena, N. Y., and a powerhouse on the U. S. side of the St. Lawrence.

TRUCKS: Ban Threatens Independents

ICC order could harm owner-operators . . . Would set up minimum 30-day contracts . . . House moves to stop agency . . . Senate action must come this session—By A. K. Rannells.

The growing trend toward shipment of steel and steel products by motor carrier may be slowed down. Its future depends on whether a bill now pending is passed by the Senate before adjournment.

Unless the measure gets Senate approval, an Interstate Commerce Commission order which bans leasing of trucks for periods of less than 30 days will go into effect as of Sept. 1.

Important to Metalworkers

Advocates of the legislation claim that unless the legislation blocking the ICC order is enacted, some 400,000 independent truckers

will suffer serious hardship and, in many cases, be forced out of business.

Already approved by the House, the bill (H.R. 3202) specifically takes away the power of ICC to impose time limits on truck leasing.

There may seem to be little direct relation between metalworking industries and either the proposed law or pending ICC order. But proponents of the trip-leasing bill say that steel consumers have a great deal at stake.

There has been a steady uptrend in the movement of steel and steel products, especially farm and other machinery and equipment, by mo-

tor carrier (THE IRON AGE, July 16, p. 71). More and more shipments are moving by truck.

Proof comes from figures showing that the rate of increase of shipments of steel and steel products by rail has failed to keep up with the increase in production.

For instance, shipments of manufactured iron and steel by rail amounted to roughly 36.6 million tons in 1948. For 1951, the figure had risen to only 36.7 million and dropped to 32.1 million last year, partly because of the steel strike.

Rail freight actually lost ground in the field of agricultural implements and equipment during the 51-year period. Only, as far the steel industry is concerned, in the field of iron ore did rail freight match production increases.

If arguments against the ICC order are valid, permitting it to stand would not only curtail availability of trucking services but could increase trucking rates.

It has been standard practice for contract carriers to draw on owner-operated trucks which do not operate over established routes and whose rate structure is based on ability to pick up a return load from the point of delivery of the previous load.

Farm Groups Opposed

In order to get this load, the so-called gypsy operator leases his truck and his own services to the contract carrier for the time necessary to make the delivery.

For this period, the gypsy operator is technically an authorized carrier, but in practice, ICC has no actual control over him. The agency says a 30-day lease requirement will do the trick.

Agriculture has been almost solidly against the ICC order and for the legislation—of which Congress has taken due note. Farm groups and members see trucking services curtailed, higher rates.

Last week the bill telling ICC to keep its hands off, that it has no right to try and regulate the duration of business contracts, passed the House and may pass in the Senate if there is time.

STEEL: Shipments Stay High in July

As Reported to the American Iron and Steel Institute

STEEL PRODUCTS	CURRENT MONTH				Pct of Total Shipments	TO DATE THIS YEAR				Pct of Total Shipments
	Carbon	Alloy	Stainless	Total		Carbon	Alloy	Stainless	Total	
Ingot	76,504	23,003	2,050	101,557	1.4	*460,083	111,025	10,339	*581,447	1.6
Blooms, slabs, billets, tube rounds, sheet bars, etc.	196,563	52,391	1,815	250,769	3.5	*966,263	269,915	9,556	*1,245,734	3.5
Skelp	8,989			8,989	0.1	44,217			44,217	0.1
Wire rods	76,176	1,660	828	78,664	1.1	378,736	9,904	3,973	392,613	1.1
Structural shapes	410,777	6,084	106	416,967	5.8	2,028,319	32,321	171	2,060,811	5.8
Steel piling	27,028			27,028	0.4	133,280	6		133,286	0.4
Plates	654,052	41,126	2,814	697,992	9.7	3,222,137	191,962	*15,013	*3,429,112	9.7
Rails—standard	154,453			154,453	2.1	752,115	64		752,179	2.1
Rails—all other	6,406			6,406	0.1	41,081	21		41,102	0.1
Joint bars	11,707			11,707	0.2	48,916			48,916	0.1
Tie plates	37,080			37,080	0.5	177,146			177,146	0.5
Track spikes	10,989			10,989	0.2	51,793			51,793	0.1
Wheels	28,971	7		28,978	0.4	145,209	588		145,797	0.4
Axles	14,861	81		14,942	0.2	80,215	280		80,495	0.2
Bars—hot rolled	641,844	226,774	4,237	872,855	12.1	*3,123,574	1,091,081	21,949	*4,236,504	12.0
Bars—reinforcing	159,024			159,024	2.2	789,013			789,013	2.2
Bars—cold finished	160,474	31,508	5,327	197,309	2.7	836,296	169,455	28,919	1,034,670	2.9
Tool steel	1,423	9,266		10,689	0.2	7,719	44,681		52,400	0.2
Standard pipe	246,839	53	1	246,893	3.4	1,252,114	282	6	1,252,404	3.5
Oil country goods	143,093	21,312		164,405	2.3	737,552	90,715		828,267	2.3
Line pipe	283,063			283,063	3.9	1,466,484	190		1,466,674	4.1
Mechanical tubing	68,960	26,130	516	95,606	1.3	361,039	137,305	2,769	501,113	1.4
Pressure tubing	32,806	3,938	1,328	38,072	0.5	177,317	22,259	7,181	206,757	0.6
Wire—drawn	270,965	4,442	3,134	278,541	3.9	1,342,661	26,108	17,283	1,385,052	3.9
Wire—nails, staples	46,042			46,042	0.6	236,410		3	236,413	0.7
Wire—barbed, twisted	14,187			14,187	0.2	85,580		1	85,581	0.2
Wire—woven fence	27,008			27,008	0.4	141,232			141,232	0.4
Wire—bale ties	4,682			4,682	0.1	17,743			17,743	0.1
Blackplate	80,991			80,991	0.8	355,241			355,241	1.0
Tin & ternplate—hot dipped	122,710			122,710	1.7	602,354			602,354	1.7
Tin plate—electrolytic	336,209			336,209	4.7	1,553,103			1,553,103	4.4
Sheets—hot rolled	642,901	42,996	1,480	687,377	9.5	3,181,142	166,462	*7,339	*3,334,943	9.4
Sheets—cold rolled	888,217	13,979	10,708	1,012,904	14.1	4,559,171	82,154	*56,554	*4,697,879	13.2
Sheets—galvanized	189,765			189,765	2.6	976,630	11		976,641	2.6
Sheets—other coated	22,908			22,908	0.3	110,213			110,213	0.3
Sheets—enameling	17,324			17,324	0.2	82,269			82,269	0.3
Electrical sheets, strip	13,842	89,146		102,988	1.0	61,160	294,574		355,734	1.0
Strip—hot rolled	209,651	4,253	359	214,263	3.0	*996,945	18,306	1,804	*1,017,055	3.0
Strip—cold rolled	163,576	2,100	21,465	187,141	2.6	*833,840	9,996	99,481	*943,317	2.7
TOTAL	6,582,979	570,249	56,168	7,209,396	100.0	32,397,412	2,748,665	282,243	35,428,320	100.0

During 1952 the companies included above represented 80.5% of the total output of finished rolled steel products as reported to the American Iron and Steel Institute.

* Revised.

DIESELS: Rail Victory Is Complete

Battle with steam locomotives reduced to mopping up operations . . . Builders consolidate forces against demobilization . . . Bank on parts, modernization now—By R. D. Raddant.

Manufacturers of diesel locomotives are in the position of generals of a victorious army. They have conquered the field so completely that they now face the problem of demobilization.

They have practically eliminated all pockets of resistance in the railroad world, placed their own durable products in almost all positions of importance, and appear to have little left to do but police up the area with repair and rebuilding programs.

On paper the diesel locomotive picture does not look too bad: A total of 1267 diesel locomotives placed in service in the first 6 months of 1953 and 498 still on order.

Predicted Boom's End

But time is running out. About 90 pct of all U. S. railroads are dieselized to some extent. In terms of locomotives in use, the roads are about 65 pct dieselized. This means that the program is almost over. Remaining steam locomotives are representative of the best and most efficient that could be made and are largely confined to feeder lines. They will be difficult to dislodge until they wear out.

Fortunately, this isn't a situation that came as a surprise. Farsighted executives saw the end of the diesel boom coming long ago, even before the program hit its peak in 1950 and 1951 when 2396 and 2558 diesel locomotives respectively were placed in use.

Figures show clearly the rise of diesel locomotives over the peak in 1951 to the precipice from which they are about to drop. The diesel started appearing on the roads in the early 30's, with four installed in 1932. From then on use increased almost steadily through the war years to a figure of 608 in 1944. A postwar slump followed, but the rise started again

with 771 in 1947, 1397 in 1948, and 1808 in 1949.

But after 1951, the first real slump in two decades occurred when the number of new units placed in service dropped to about 2000 from a record 2558 in 1950. The 1953 figure should be about 1600.

In contrast, steam locomotive

Locomotives Installed, On Order

PLACED IN USE		1953	1952
June	1 steam		2 steam
	174 diesel		222 diesel
May	1 steam		2 steam
	1 gas turbine		2 gas turbine
ON ORDER			
July 1	10 electric		
	498 diesel		1156 diesel
TOTAL 6 MONTHS	6 steam		26 steam
	18 gas turbine		6 gas turbine
PLACED IN SERVICE		1953	1952
	9 steam		8 steam
	1 gas turbine		4 gas turbine
		1267 diesel	1702 diesel

production has dropped from a modern high of 1313 in 1926 to a trickle of about 1 a month with only 10 on order at the moment.

The story of dieselization of U. S. railroads is well known. It was a simple matter of cost and efficiency that replaced the snorting Iron Horse with the smooth running diesels that now dominate almost all roads. Some of the major ones are completely dieselized, have no steam locomotives.

But what will happen now that the lush days are over for diesel engine manufacturers? It will be hard enough on the big manufacturers such as Electromotive Div. of General Motors and American Locomotive Co. It will be really tough on the smaller manufacturers such as Fairbanks, Morse & Co. who, despite an excellent product, might not have the number of units on the road to sustain a major parts or reconditioning program.

Electromotive's program for the present and future reflects the situation as they see it. With excellent foresight, this company realized long ago that the market would be saturated at about this time. Accordingly, Electromotive halted its plant expansion program at a point where management believed facilities would be able to pay their own way in the aftermath of the boom.

In the most lush days of the dieselization program, as much as 48 pct of Electromotive's manufacturing was "farmed out" to other manufacturers. Now the division is ready to follow the pattern it had set for conditions that were inevitable.

A major part of Electromotive's current program is a parts business that at the present time is higher than total dollar volume at the end of World War II.

Soup Up Powerplants

A second major part of the retrenching plan is a conversion program in which older diesels are completely overhauled and reworked. This does not mean a simple repair or replacement of worn parts, but a complete rebuilding of the unit which is returned to the railroad as a modern and completely new unit.

For example, an old unit may return to the plant as an 1800-hp unit and leave as a dressed-up, modern locomotive with a revitalized 2200-hp powerplant.

One railroad authority pointed out that in the old steam days there was room for only two major producers. Now there are four scrambling for the remaining diesel market.

As if things weren't bad enough as they are, diesel manufacturers face threats of new locomotive types that may do the same to the diesel that diesel did to steam. (Number of straight electric locomotives seems to have held steady on the roads, but few are being ordered.)

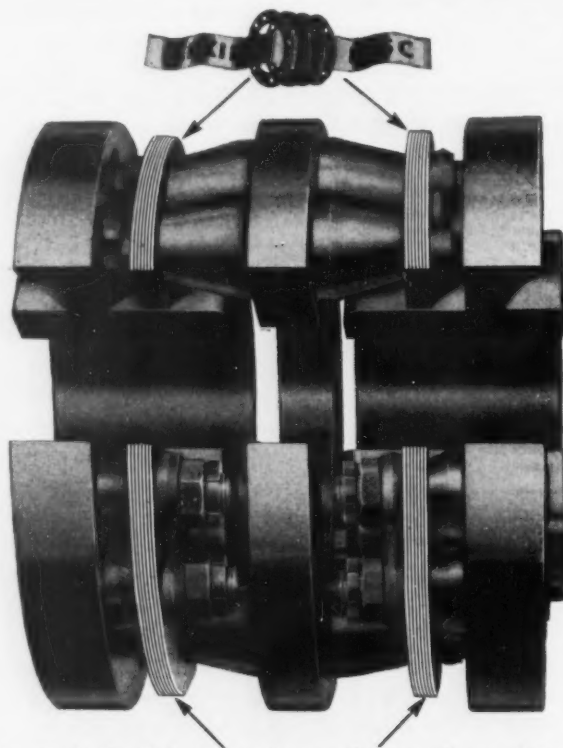
It should also be pointed out that diesels are actually diesel-

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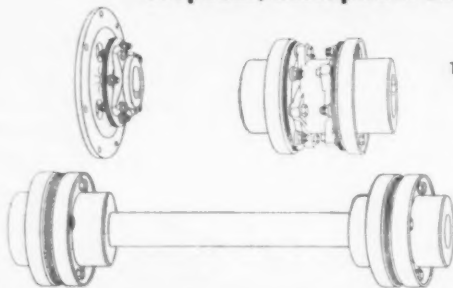
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NO BACKLASH	No Loose Parts. All Parts Solidly Bolted.
CAN NOT "CREATE" THRUST	Free End Float under Load and Misalignment. No Rubbing Action to cause Axial Movement.
PERMANENT TORSIONAL CHARACTERISTICS	Drives Like a Solid Coupling. Elastic Constant Does Not Change. Original Balance is Maintained.



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Research

ENAMEL: Study How Steel

U. S. Steel sets up new lab to determine which steels are best for porcelain coatings.

U. S. Steel Corp. has set up a new specialized research laboratory in Pittsburgh to test new steels for use with enamel finishes such as are employed in the manufacture of refrigerators.

Establishment of the new lab is an indication of the steel industry's growing interest in porcelainized-steel. In addition to the growth of conventional uses of enameled-steel in appliances, application of ceramic jackets on steel parts to increase resistance to the high temperatures of jet and piston aircraft engines has opened up an entirely new field (THE IRON AGE, Apr. 9 p. 84).

Big Steel's new Pittsburgh lab, in addition to being used to test new steels and surfaces for enameling, will also serve as a "torture chamber" to determine the amount of abuse finished porcelainized-steel products can withstand.

In production of enamel-coated steel items, the porcelain enamel is fused to steel at temperatures

Diesel

Continued

electric with the diesel engines used to generate driving power.

In recent years the gas turbine-electric locomotive has been developed and has been accepted enthusiastically by at least one railroad, Union Pacific, which has 7 with 18 more on order.

Geographic relation of this railroad to gasoline supply is a big reason for this program.

Probably of even more importance is the steam turbine engine, one of which is already on order by Norfolk and Western. This uses coal as the fuel source and, in the face of dwindling oil supplies for diesels, could in time complete the swing from coal to oil and back again.

Steel Takes It

around 2000F. Since the major ingredient of porcelain enamel is frit (glass), the surface of the steel is actually given a glass coating. Life of the surface depends on the structural strength of the steel and how well it fuses with the glass.

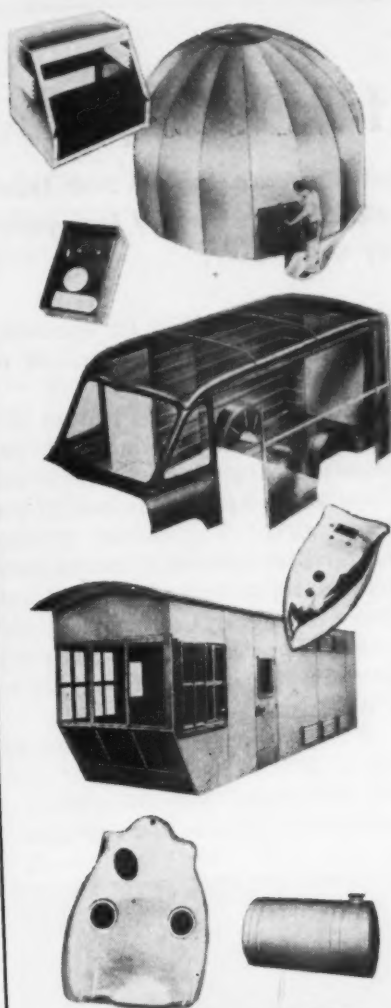


ENAMELED STEEL is tested under torsion at U. S. Steel's new lab. Sheet of enameled steel is twisted until the coating cracks and flakes off.

U. S. Steel says it intends to test many new and standard steels at the high level temperatures required to bake on porcelain enamel coatings. These sag testing studies will determine which steels are best for use in porcelain-enameled products and what heat treatments give the best results.

Specimens will be tested in the unenameled state so that the sag characteristics of the steel rather than of the combined steel and enamel can be determined.

To duplicate the surface treatments used by commercial enamblers and to study surface treatments to improve enamel adherence, the new lab will also have a pickling department. In addition to acid treatments, steel panels will be prepared for enamel coatings by abrasive blasting.



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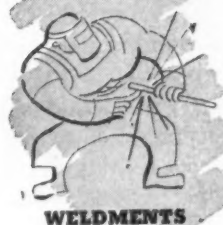
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FORMINGS



STAMPINGS



WELDMENTS

COLLEGES: Seek Aid from Industry

American colleges and universities are hoping that industry will give more financial aid . . . Need money for operating expenses, scholarships—By G. G. Carr.

American industry is the largest single consumer of college graduates in the world. Now the colleges are asking their best customer for help.

The request is that corporations provide direct financial aid to the more than 1000 private colleges and universities in the U. S.

Industry has been contributing heavily to educational institutions for many years, but most of its gifts have been for specific projects. Now industry is being asked to increase its aid to scholarship funds and to assume part of general operating expenses.

The Commission on Financing

have placed the need for operating funds as high as \$300 million to \$400 million a year.

A breakdown of the private college's 1950 income shows 72 pct came from student fees, 12 pct from endowment funds and 13 pct from gifts. The larger private universities received 47 pct of their income from student fees, 19 pct from the Federal government for research projects, 12 pct from endowment funds, and 10 pct from gifts.

While business contributions of \$40 to \$50 million dollars per year are impressive, National Planning Association reports that corporate



NOT 3-D, but educators watching the pouring of ductile iron at The Cooper-Bessemer Corp., Mount Vernon, Ohio, during a recent plant tour for teachers.

Higher Education, sponsored by the Association of American Universities, estimates that business contributions to higher education in 1950 ran between \$40 million and \$50 million. It also points out that corporate contributions have been going up ever since 1936, when the Federal Corporate Tax law was amended to permit a tax exemption of up to 5 pct of a company's net income for contributions to charitable and educational organizations.

Taking the year 1950 as a base, the commission found that about 1500 colleges, universities and professional schools needed \$200 million to meet operating expenses. That figure was 15 pct above actual income received. Later estimates

gifts to educational and charitable institutions under the 5 pct tax exemption provision only once exceeded 1 pct of total net income for the period 1936 to 1949.

Industry Takes It Seriously

There are signs that business is showing increased realization of the colleges' plight. Lehigh University for example reports that corporate gifts to its scholarship fund have more than doubled since 1950, and group of industrialists recently organized the Council For Financial Aid to Education.

Indicative of the sincere interest industry is taking in the problem is the prominence of the men heading the council: Frank W. Abrams, chairman of the board of

the Standard Oil Co., Irving S. Olds, former chairman of the board of U. S. Steel Corp.; Alfred P. Sloan, Jr., chairman, General Motors Corp.; Walter Paepcke, chairman, Container Corp. of America, and Henning W. Prentiss, Jr., chairman, Armstrong Cork Co.

Want More Graduates

Bethlehem Steel Co. recently established a program of financial assistance to privately endowed colleges and universities. The company is offering financial aid to around 45 institutions, paying about \$3000 to a college for every graduate Bethlehem enrolls in its training program.

In inaugurating this program, Bethlehem's president, Eugene G. Grace, said: "If our industrial progress is to continue, more and more educated men are going to be needed, and it is important that the colleges be in a position to supply them."

Wonder if It's Right

Recent studies by the National Planning Association and others have shown that in many cases, business executives are sympathetic to larger universities. But many business leaders question the legal status of corporate contributions to private institutions.

They recognize the advantages of the 5 pct clause in the Federal tax law, but wonder if they have the right to give money that really belongs to the stockholders to educational institutions.

Providing money for research scholarships is perfectly acceptable to stockholders, but there have been doubts about gifts to schools.

Court Upholds Gifts

Legislatures in 29 states have now passed laws specifically allowing corporations to make such contributions. And the Superior Court of New Jersey last month upheld the right of a corporation to donate funds to a private university.

The Court cited laws allowing corporate donations to "charitable . . . instrumentalities conducive to public welfare" and also to "organi-

MILITARY: Can Spend \$34.7 Billion

Congress allocates this sum to Defense Dept. . . . Air Force, though cut, will still be given \$11.2 billion . . . Block attempt to cut \$400 million from tool reserves.

Overall answer to industry's questions about government orders is that the Defense Dept. will have \$34.7 billion in new money to work with in the fiscal year that began July 1.

Biggest slice (\$13 billion) of the total pie goes to the Army. Air Force is to have about \$11.2 billion of the new money. Navy's share is \$9.5 billion. The total sum, large as it is, still is \$6 billion below what former President Truman asked in January. Conferees got together last week to iron out a few of their differences and reached agreement on the overall total.

Fighting Forces Not Cut

Senate approval of the \$34.7 billion money bill came after beating down attempts to restore at least \$400 million of the sharply reduced Air Force funds. One defeated proposal was to raise the \$400 million by cutting into

funds for reserve machine tools.

As it now stands, Army, Navy and Marine Corps fighting forces will be retained at about present levels but all three services will have to trim their support units slightly.

Navy will get enough money to maintain present fleet levels, will be able to continue a moderate improvement and conversion program, and to start work on a third super-carrier of the Forrestal class.

Will Have 120 Wings

Argument continues as to what effect the cut of \$4 billion-plus will do to the Air Force goal of 143 wings. Congressional action was designed to boost the present 106 wings to 114 by next June, and to 120 by June 1955.

Some spokesmen maintain that the fully equipped 143-wing goal couldn't be reached within the next 2 years in any event and

that an interim force of 120 ready-to-flight wings is possible.

This view is supported by Air Force Secretary Talbott who says "no major type combat aircraft in the 143-wing program are being eliminated except B-47's previously scheduled to equip combat training wings." These planes hadn't been ordered anyway.

In passing the bill, the Senate made a small but relatively important change which prevents the award of defense contracts to aid unemployment if better contracts can be obtained elsewhere.

Exploration:

Government-aided quest for strategic minerals quickens.

Interest in the federally aided program to discover and produce critical and strategic minerals is growing. During the second quarter, Defense Minerals Exploration Administration (DEMA) signed 46 new mineral exploration contracts, bringing the total for the program to 517. Monthly average of applications this year is running ahead of last year's pace, agency officials report.

Value of the 517 contracts is estimated at \$25,171,583 of which the government's share is \$15,204,434, while the operators put up \$9,967,149. The contracts involve exploration for 26 minerals in 31 states and Alaska.

In addition to recording the 500th contract and passing the \$25 million mark, DEMA also certified the 52nd discovery or development of ore. Certification by the government is made only when the exploration project has resulted in ore discovery or development in sufficient quantities for commercial production within 10 years of the contract date.

Certifications at the end of the second quarter were split up to cover: lead-zinc, 16; tungsten, 7; mica, 7; beryl-mica, 5; lead-zinc-copper, 5; fluorspar and magnetite, 2 each; antimony, monazite, rutile, sulfur, talc and uranium, 1 each.

—Education—

zations engaged in education, scientific or benevolent activities."

Another difficulty businessmen fear is how to determine which schools to aid. Research projects can be granted to large universities on the basis of qualified men and facilities but supporting general educational activities, particularly liberal arts programs, poses another problem.

Split Contributions

The colleges, however, have a plan to avoid this difficulty. According to a newly completed National Better Business Bureau survey, there are now 30 college funds or foundations set up on a local or regional basis.

These foundations will accept gifts for specifically designated

colleges, but if the contribution is not earmarked for a certain college, the foundation splits the amount of the gift among its various member colleges.

Most common method of distribution in the case is on a 60-40 basis. Member schools receive equal shares of 60 pct of the gifts while 40 pct is allocated on the basis of enrollment.

Some of the foundations say they are hoping to get individual contributions, others seek support of groups like the Rockefeller and Ford Foundations. But most are counting on support from corporations.

Organization of colleges and regional groups should make it easier for industry to provide this support.

Materials:

Allotments of steel, copper, aluminum cut for last quarter.

Fourth quarter steel setasides for direct defense and military programs will run approximately 450,000 tons under third quarter requirements.

Copper and aluminum setaside requirements will run approximately 10 pct under third quarter, according to officials in charge of defense and military allocations.

Specifically, Office of Defense Mobilization has decided upon fourth quarter setasides of basic materials as follows:

Steel, 1,837,000 tons as compared with 2,279,000 for third quarter;

Copper, 217.5 million pounds compared with 243.6 million;

Aluminum, 203.6 million pounds compared with 224 million.

This substantial reduction in mill setasides doesn't indicate any cutback in military use or needs, ODM officials say.

Instead, it means a letting go of controls. Due to improved supplies, many contractors and sub-

contractors are able to buy on the open market instead of having to go through red tape of applying to ODM for priorities.

From industry sources it is learned that defense production has not been using all material set aside for it. Inventories are generally at least up to snuff and there have been no calls for some material held for military use.

Will Now Buy Non-Ruby Mica

Government procurement policy with reference to domestic mica has been broadened to include non-ruby mica of acceptable quality.

Acceptable quality under general Services Administration standards means that non-ruby mica must not only come up to specifications as to form, color and size but must also get by the so-called Q-metering test.

Prices will range from \$56 a pound for No. 3 and larger down to \$1.60 a pound for Nos. 5½ and 6 half-primed. This is somewhat less than government price for ruby mica which ranges from \$2 to \$70 a pound.

Contracts Reported Last Week

Including description, quantity, dollar values, contractor and address. Italics indicate small business representatives.

Telescope mount, \$175,712, Cummings Machine Works, Boston.
Mount, telescope, \$1,921,648, American Cystoscope Makers, New York.
Spare parts, watch repair, 150,000, \$65,500, Philadelphia Watch Supply Co., Philadelphia.
Watches, wrist, 33,000, \$631,620, Bulova Watch Co., New York.
Elbow telescope, 4500, \$296,505, American Cystoscope Makers, New York.
Spare parts, for relay power rack, 600, \$108,824, Bechman Instruments, South Pasadena, Calif.
Lathe, 11 ea, \$53,206, Harding Bros. Corp., Elmira, N. Y.
Lathes, 13 ea, \$119,604, Hendey Machine Co., Torrington, Conn.
Modification kit to convert engine, 825 to 1125 ea, \$121,061, Willys Motors, Inc., Toledo.
Axle, steel, 4500 ea, \$57,766, Henry Products Co., Brooklyn.
Vibrator, nonsynchronous, 5036 ea, \$120,687, Kurman Electric Co., Long Island City, N. Y.
Diesel generator units, 30 ea, \$4,052,352, Gremco, Inc., Fort Worth, Texas.
Servo control, \$514,057, Seaboard Electric Co., New York.
Actuators, thermostats & shaft assys, 1 lot, \$941,545, Garret Corp., Los Angeles.
Generators, \$552,259, General Electric Co., Schenectady, N. Y., W. H. Bobear.
Generators, 670 ea, \$286,413, Jack & Heintz, Inc., Cleveland.
Cavity, 399 ea, \$54,562, Lavole Laboratories, Inc., Morganville, N. J.
Tuning assy, 2094 ea, \$87,403, Dayton Aviation Radio & Equipment Corp., Van-dalia, Ohio.
Spare parts, \$202,835, AVCO Mfg. Corp., Williamsport, Pa.
Indicator, airspeed, 2623 ea, \$785,262, Kollsman Instrument Corp., Elmhurst, N. Y.
Tank, steel, vertical, bolted, knockdown, 72, \$871,400, Bishop Mfg. Co., Carlisle, Pa.
Ice making machine, 400, \$199,400, L. D. Hoffman & Ryan, Minneapolis.
Generator set, 159, \$297,486, Master Vibrator Co., Dayton.
Generator set, 3000 kw, 2, \$125,719, Nordberg Mfg. Co., Milwaukee.
Spare parts, job, \$420,269, Burke Electric Co., Erie, Pa.
Generator set, 144, \$285,804, Master Vibrator Co., Dayton.
Heater, space, 3272, \$110,430, Loneran Mfg. Co., Albion, Mich.
Heater, water, 280, \$153,792, Dewy-Shepard Boiler Co., Inc., Peru, Ind.
Heater, space, 500, \$88,565, The Lennox Furnace Co., Syracuse, N. Y.
Pump, centrifugal, 73, \$142,204, John Reiner & Co., Long Island City, N. Y.
Mount, telescope, M25, \$581,346, Anchor Slide Fastener Corp., Long Island City, N. Y.
Generator set, 135, \$442,688, R. H. Shepard Co., Inc., Hanover, Pa.
Pump, centrifugal, for petroleum pipe line, 90, \$422,100, Barnes Mfg. Co., Mansfield, Ohio.
Elevators, electric repair parts, var \$86,370, Westinghouse Electric Corp., New York.
Extinguisher, fire, 60 ea, \$77,614, Cardox Corp., Chicago.
Generator set, 636, \$2,511,564, Consolidated Diesel Electric Corp., Stamford, Conn.
Can, 2435, \$813,686, Continental Can Co., St. Louis.
Breech ring, forgings, rough machined, 195, \$280,493, Cameron Iron Works, Inc., Houston, Texas.
Mortar metal parts assy, 50979, \$76,468, Heckethorn Mfg. Co., Littleton, Colo.
Shell, 300,000, \$394,384, Heckethorn Mfg. Co., Littleton, Colo.
Pump & drum cover, 1518, \$62,511, Stewart-Warner Co., Chicago, E. N. Osterberg.
Wrenches, pneumatic, 173, \$122,333, Ingersoll Rand Co., Birmingham, Ala.
Compressors, 1011, \$2,298,997, Joy Mfg. Co., Knoxville, Tenn.
Machine, glass grinding, 421, \$182,714, Henry G. Lange Machine Works, Chicago.
Engine assy, 42, \$30,049, Waukesha Motors Co., Waukesha, Wis.
Lathe, 21, \$424,962, Noland Co., Atlanta.

IRON & STEEL: June Output By Districts

As Reported to the American Iron and Steel Institute

BLAST FURNACE —NET TONS	PIG IRON			FERROMANG., SPIEGEL & SILVERY IRON		TOTAL		Pct of Capacity	
	Annual Capacity	June	Year to Date	June	Year to Date	June	Year to Date	June	Year to Date
DISTRICTS	Annual Capacity	June	Year to Date	June	Year to Date	June	Year to Date	June	Year to Date
Eastern.....	16,312,990	1,274,734	7,244,037	25,143	165,049	1,299,877	7,409,086	96.8	91.5
Pitts.-Yngstn.....	28,643,120	2,215,626	13,815,596	34,004	207,582	2,249,630	14,023,178	95.5	98.7
Cleve.-Detroit.....	8,633,800	702,734	4,209,821			702,734	4,209,821	98.9	98.3
Chicago.....	16,251,250	1,322,792	7,830,924	5,779	5,779	1,328,571	7,836,703	99.4	97.2
Southern.....	6,020,380	457,800	2,839,097	10,048	40,236	467,846	2,879,333	94.4	96.4
Western.....	3,518,700	323,873	1,955,428			323,873	1,955,428	111.9	112.0
TOTAL.....	70,380,240	6,297,559	37,894,903	74,972	418,646	6,372,531	38,313,549	97.6	97.3

STEEL —NET TONS	TOTAL STEEL*			ALLOY STEEL		HOT TOPPED CARBON INGOTS	
	Annual Capacity	June	Year to Date	Pct of Capacity		June	Year to Date
				June	Year to Date		
DISTRICTS	Annual Capacity	June	Year to Date	June	Year to Date	June	Year to Date
Eastern.....	23,863,810	1,940,309	11,515,947	96.8	97.3	159,452	1,000,156
Pitts.-Yngstn.....	43,621,000	3,431,393	21,718,029	95.6	100.3	534,197	3,323,953
Cleve.-Detroit.....	12,002,900	942,777	5,742,690	95.5	98.4	80,862	510,778
Chicago.....	24,960,600	2,047,606	12,572,122	99.7	101.5	140,954	935,953
Southern.....	6,036,160	468,103	2,868,973	94.3	95.8	4,903	30,331
Western.....	7,063,000	574,289	3,526,175	98.8	100.7	13,435	82,496
TOTAL.....	117,547,470	9,404,479	57,945,936	97.2	99.4	933,803	5,883,665

* Includes Alloy Steel, Hot Topped Carbon Ingots.



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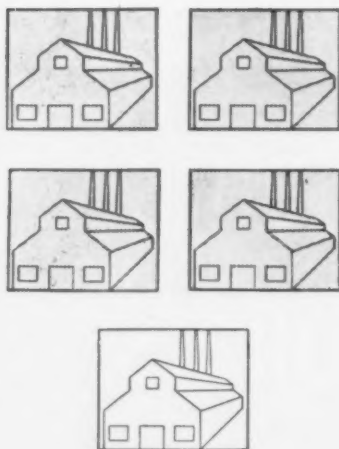
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July 30, 1953

47

4 out of 5



Since 1946, five major press plants have been built for the automotive industry to meet the increased demand for passenger cars and trucks.

Commercial Contracting Corporation was selected to install all machinery and equipment in four of these five plants.

Currently, CCC crews are beginning to place the first shipments of more than 1,000 pieces of equipment to be housed in the sixth such huge press plant constructed in the United States since the War's end.

Erecting heavy presses and other machinery is an important part of our business.

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Industrial Briefs

Expanding . . . WESTINGHOUSE ELECTRIC CORP., Pittsburgh, is expanding its Transformer Div. at Sharon, Pa., for the purpose of building tanks and power transformers.

None Larger . . . GENERAL ELECTRIC CO., Schenectady, N. Y., has installed a totally-enclosed gas-filled induction motor weighing 14 tons at Standard Oil Co.'s refinery at Everett, Mass.

Roll Call . . . INSTITUTE OF SCRAP IRON & STEEL, INC., Washington, has enrolled Harold S. Brady Co., Chicago, and Schrecks Scrap Service, Inc., North Tonawanda, N. Y.

Announcement . . . THE DURION SALES CO., INC., Dayton, Ohio, has opened a direct sales office in Needham, Mass.

Elected . . . The board of directors of DUNLAP & ASSOCIATES, INC., Stamford, Conn., has elected H. E. Blank, Jr., a vice-president.

Agreement . . . YALE & TOWNE MFG. CO., New York, has purchased the business and assets of the Powdered Metal Products Corp. of America in exchange for 12,000 share of stock.

First Run . . . INLAND STEEL CO., Chicago, completed a 3-year program of repowering and lengthening its ore boats when the carrier *Philip D. Block* left Chicago en route to the upper Great Lakes.

Appointment . . . AMERICAN IRON & STEEL INSTITUTE, New York, has named Leo Teplow as industrial relations consultant.

Sold . . . CHICAGO PNEUMATIC TOOL CO., New York, has acquired the assets of Jacobs Mfg. Co., West Hartford, Conn.

Change of Address . . . TUBE DISTRIBUTORS CO., INC., has moved its general offices from Brooklyn, N. Y., to a new site recently completed in Garden City, N. Y.

Atomic Approval . . . VANADIUM CORP. OF AMERICA, New York, has obtained consent of the Atomic Energy Commission to install a roaster for processing vanadium-uranium ores at its Naturita, Colo., mill.

To Be Continued . . . U. S. AIR FORCE is extending its employment of standardized steel structures at its Greenland bases after a year's successful use of such buildings.

Going Up . . . AMERICAN CYANAMID CO., Calco Chemical Div., Bound Brook, N. J., will build a \$14-million titanium dioxide plant on the outskirts of Savannah, Ga.

Facts and Figures . . . CLEVELAND-CLIFFS IRON CO., Cleveland, reports for the 6 months ending June 30, 1953 consolidated net earnings of \$3,827,676 after providing for amortization of defense and income taxes.

Gets Plant Contract . . . NEW BEDFORD DEFENSE PRODUCTS, a subsidiary of Firestone Tire & Rubber Co., Akron, Ohio, was awarded an \$8-million contract by the Boston Ordnance district to produce 106-mm shells.

In Training . . . TECHNICAL OPERATIONS, INC., Arlington, Mass., will offer a 2-weeks' training program in cobalt 60 for radiography in industry early this fall.

TV Clinic . . . ADMIRAL CORP., Chicago, will hold three regional television sales clinics for its managers and distributors in New York, Chicago and Los Angeles in order to refresh personnel with all the features of its new receivers.

Merger . . . Livingston & Southard, New York, recently became a division of LURIA BROS. & CO., INC., Philadelphia.

Across the Sea . . . NORTON BEHR-MANNING OVERSEAS, INC., Worcester, Mass., has dedicated a new plant in Belfast, N. Ireland, thus bringing the total to 12 factories operated on foreign soil by this organization.

To Sum Up . . . THE GUARDIAN STEEL CORP., Detroit, has just completed its second addition to its warehouse in the last 2 years, making a total of 50,000 sq ft under roof.

Appointed . . . COPES-VULCAN DIV., Continental Foundry & Machine Co., Pennsylvania, has appointed The Hank Thurstin Co., 980 Forest St., Denver, its representative.

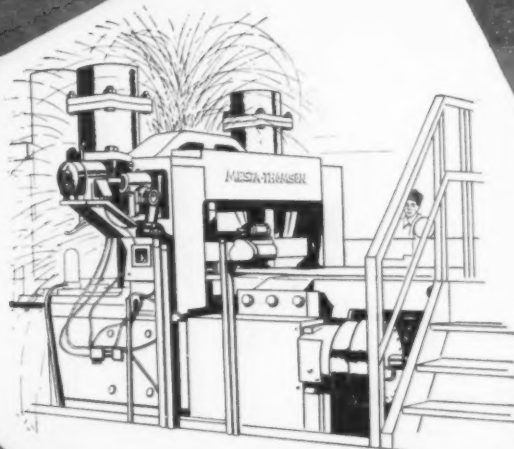
MESTA

HIGH-SPEED

CONTINUOUS PICKLING LINES



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WITH TRIMMERS, UPCOILERS, AND MESTA-THOMSON FLASH WELDERS



MESTA-THOMSON FLASH WELDER INSTALLED IN
A MESTA HIGH-SPEED CONTINUOUS PICKLING LINE

Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY

PITTSBURGH, PENNSYLVANIA

The Automotive Assembly Line

Steel Buyers Move Into Driver's Seat

Detroit steel sales pattern shifts . . . Demand still strong . . . But automotive buyers are getting cautious . . . Shun high cost material . . . Conversion slows—By R. D. Raddant.

Probably nowhere in the world is so much steel selling and buying concentrated in one area as in Detroit in the neighborhood of the General Motors Building.

It is only an elevator ride from the district offices of some of the largest steel companies to the offices where the purchasing policies of General Motors are made. Those who are not in elevator range have only to take the concourse from the neighboring Fisher Building where the remainder of the steel people are located. It's a short jaunt to Ford, Chrysler, Packard, Nash, Hudson, Kaiser, and major body plants.

Still Tight . . . Right now a big change is going on in this neighborhood as occupancy of the driver's seat in the steel market shifts. Steel people are giving way to the big customers.

It hasn't taken place as yet.

Automotive steel is still on virtual allotment and all the pressure in the world is making very little headway in changing it. Cautious attitudes in buying are treated lightly by steel salesmen.

Two months ago a buyer was characterized by a desperate plea for more steel of any kind. He took what he could get with thanks.

Market Shifting . . . Today this same buyer, who once came to the steel office with his hat in his hand, has a different look. He refuses to talk about anything past October, asks adjustments in his allotment. He even mentions quality, a word he avoided for months in the days of the extreme shortage. He is particularly brusque with a high cost steel producer.

This is probably overdoing it a bit, but the market is in a state

of transition and both sides know it. There are soft spots, but the market for mill steel is strong enough that no one is worrying. And the buyer feels better now that he can meet his requirements without too much extra cost.

What's Happening . . . Here are some concrete examples of actions that prompt the new market thinking:

Very recently Chrysler cancelled all its conversion orders that had not yet reached the melting stage or could not be in the consumer's hands until the fourth quarter. Chrysler's purchasing people are confident that by that time they will not need high cost steel.

On the other hand when one independent cancelled some third quarter conversion steel, it was immediately picked up by two other auto manufacturers.

Everybody's Happy . . . Another company is rumored to have offered 12,000 tons of steel to warehouses in this area. This is probably foreign steel or some types or sizes that were purchased in the extremely critical days but which cannot be readily used.

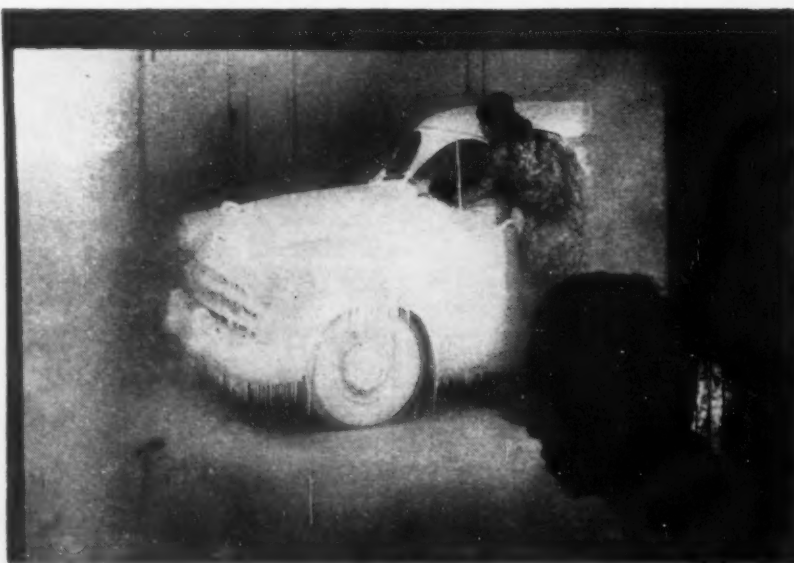
Ford has placed some conversion orders for the fourth quarter, but expects to wind it up shortly after the quarter starts. General Motors is in about the same condition with high priced steel.

In other words, the situation now is very close to everyone's liking. There is enough steel to make consumers happy, but the market is strong enough so that there is little or no fear of the bottom dropping out.

It's a good time for vacations.

V-6 Next? . . . The V-6 engine has been kicked around in the auto industry for a long time. Scarcely any auto company manufacturing light cars has not experimented seriously with it at one time or another.

Until recently the manufacturer



SUMMER HEAT is no problem to Chrysler Corp. technicians cold-testing a Dodge in frosted cold-test room where temperatures often go down to 40-below.

that seemed the most logical candidate to manufacture one, if anybody did, was Plymouth. Economy of weight, size and fuel consumption are advantages that might be obtained if a suitable V-6 can be developed.

Balancing Is Obstacle . . . It was learned recently, however, that a V-6 with an angle of 60° between cylinder banks has been patented by General Motors. It is believed this engine was developed in research laboratories several years ago.

Big obstacle in a V-6 is in balancing the engine. V's of 60° or 120° have been discussed as most logical. A 60° angle would require a 6-throw crankshaft, but a 120° V would result in an engine spread too wide for a conventional engine space. It would also be difficult to employ the valve-in-head design.

Shun "Crazy" Credit . . . Auto dealers were warned in Washington not to indulge in "crazy credit policies" last week.

Auto installment credit was the topic of a day's conference between the National Automobile Dealers Assn., officials of major auto finance companies, and government credit experts.

No Reg. W . . . It was indicated by William Martin, Jr., chairman of the Federal Reserve Board, that the Board at this time has no disposition to reimpose anything like the late Reg. W.

Conference was called primarily by the dealers in an effort to dispel any inclination in Washington to revive credit curbs.

Frederick J. Bell, executive vice-president of the auto dealers, told the conference that the average new car is paid for in 21 months and that outstanding installment credit compared with a year ago presents a "completely distorted picture" unless qualified. According to Mr. Bell, installment credits on autos stood at \$9.3 billion on May 31 against \$6.5 billion at the same date in 1952.

Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS
July 25, 1953...	146,793	28,803
July 18, 1953...	146,208	29,347
July 26, 1953...	34,870	7,675
July 19, 1953...	27,710	4,758

*Estimated Source: Ward's Reports

Output:

Industry confusing as some cut down, others speed up.

Conditions that contradict each other and prevent a general evaluation of the auto production picture continue to prevail in Detroit.

At the moment, three independents, Hudson, Nash, and Kaiser are at a complete standstill. But two other independents, Packard and Studebaker, are increasing their schedules.

Why They Close

In the Big Three, Ford and General Motors divisions are all running at top speed, but Chrysler divisions will close Aug. 3 for an-

nual inventory which will require the suspension of most operations for a period "From a day to a week."

The three down companies require some explanation. Hudson suspended production for a model change, one of the earliest on record. How long this will take is indefinite. There has been very little talk in Detroit about the 1954 Hudson, but styling changes without revising the step-down concept are expected.

Nash is apparently over-stocked at its dealers and is letting this problem ease a little.

Willow Run Quiet

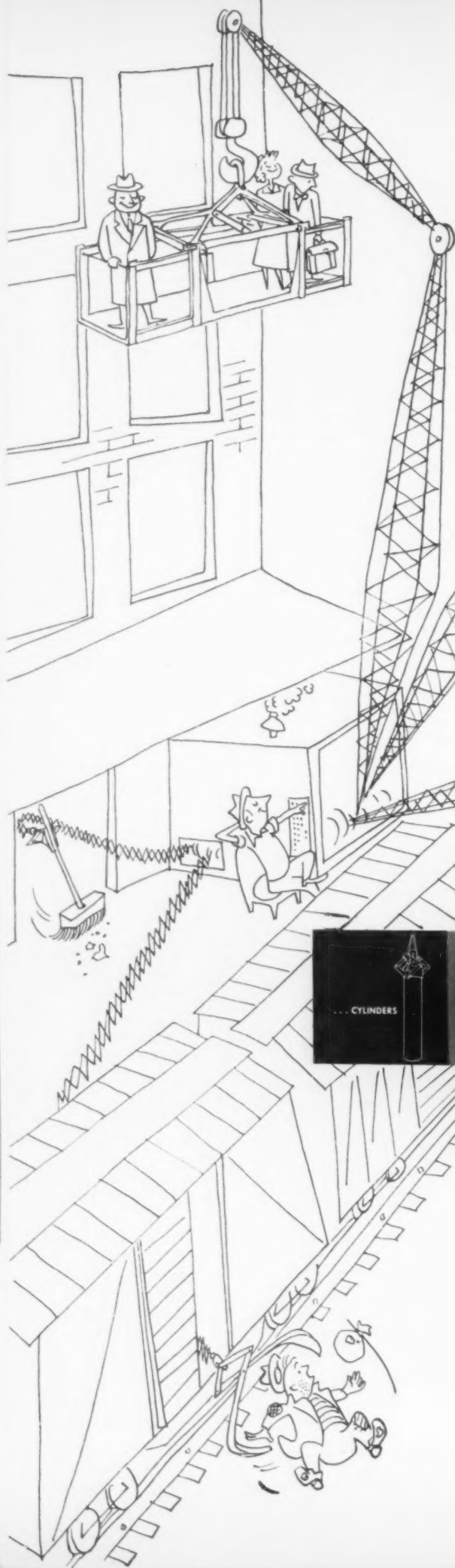
What is going on at Kaiser is anybody's guess. Little word has emanated from Willow Run since Kaiser's aircraft contract was canceled. This company is now in the process of revising its operations, presumably to integrate them with Willys.

It is expected that the Mammoth Willow Run plant will end up as the body plant for all cars with assembly operations at Toledo.

THE BULL OF THE WOODS

By J. R. Williams





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... TONGS FOR EVERY GRABBING PROBLEM

This Week in Washington

Guaranteed Wages Not The Answer

Industrial peace can't be assured by a guaranteed annual wage, industry spokesmen say . . . Work, pay depend too much on unpredictables . . . Urge cooperation—By G. H. Baker.

Guaranteed wage programs provide no real answer to either labor's or management's long-range search for industrial peace, business spokesmen have told Congressional committees looking into the current clamor for industry-wide adoption of guaranteed-wage schemes.

The committees are noncommittal about taking any official position on the pros or cons of such wage setups, but are unofficially agreed on the merits on gaining industrial peace via the bargaining table rather than by Washington edict.

Too Many Unknowns . . . It is pointed out that a guaranteed annual wage can do little to regulate work or pay, since such intangible factors as future demand and production are always unknown quantities. Answer actually lies, business spokesmen point out, in leveling out cyclical unemployment by greater cooperation between labor and management.

No company can with any degree of certainty predict its future sales. Consequently, it is difficult if not impossible to "guarantee" its payroll, its profits, or its losses.

More Renegotiation . . . Senate Finance Committee is considering House-passed legislation which extends contract renegotiation authority until Dec. 31, 1954. The present law is scheduled to expire at the end of this year.

As passed by the House, the extension bill makes three important changes in the law:

1. Government purchases of materials for use in synthetic rubber products destined for consumer use are exempt.
2. Contracts and subcontracts

for standard commercial articles may be exempted by the renegotiation board.

3. Subcontractors building machine tools would be subject to renegotiation to the extent that a tool is used in the defense program. Post-defense use of any tool would not be subject to renegotiation.

It's Worth More . . . Value of the consumer's dollar and the value of industrial output both made considerable gains in the first six months of this year, new government studies indicate.

Production of major consumer durable goods during the first half of 1953 was 40 pct higher than in the same period of 1952.

Total wage and salary income is running about \$15 billion higher at annual rates than in June of 1952. This is a rise of about eight pct.

Because consumer prices are about the same as they were last year, the real purchasing power of income has increased. Government experts say this is the basic factor in the enlarged demands for consumer goods, which so far this

year have run six or seven pct over 1952 levels.

Don't Blame the Rates . . . Railroad spokesmen tell the rate-making Interstate Commerce Commission that the current slump in coal output and consumption is due primarily to last year's steel strike and an unusually mild winter. They deny that high rail rates on coal shipments are to blame.

Coal rates were boosted 12 pct last year by the ICC. Rates on most other commodities went up 15 pct.

Roy S. Kern, chairman of a coal, coke, and iron ore committee for central territory railroads, told the ICC last week the coal industry "isn't as poverty-stricken as a lot of people want us to believe."

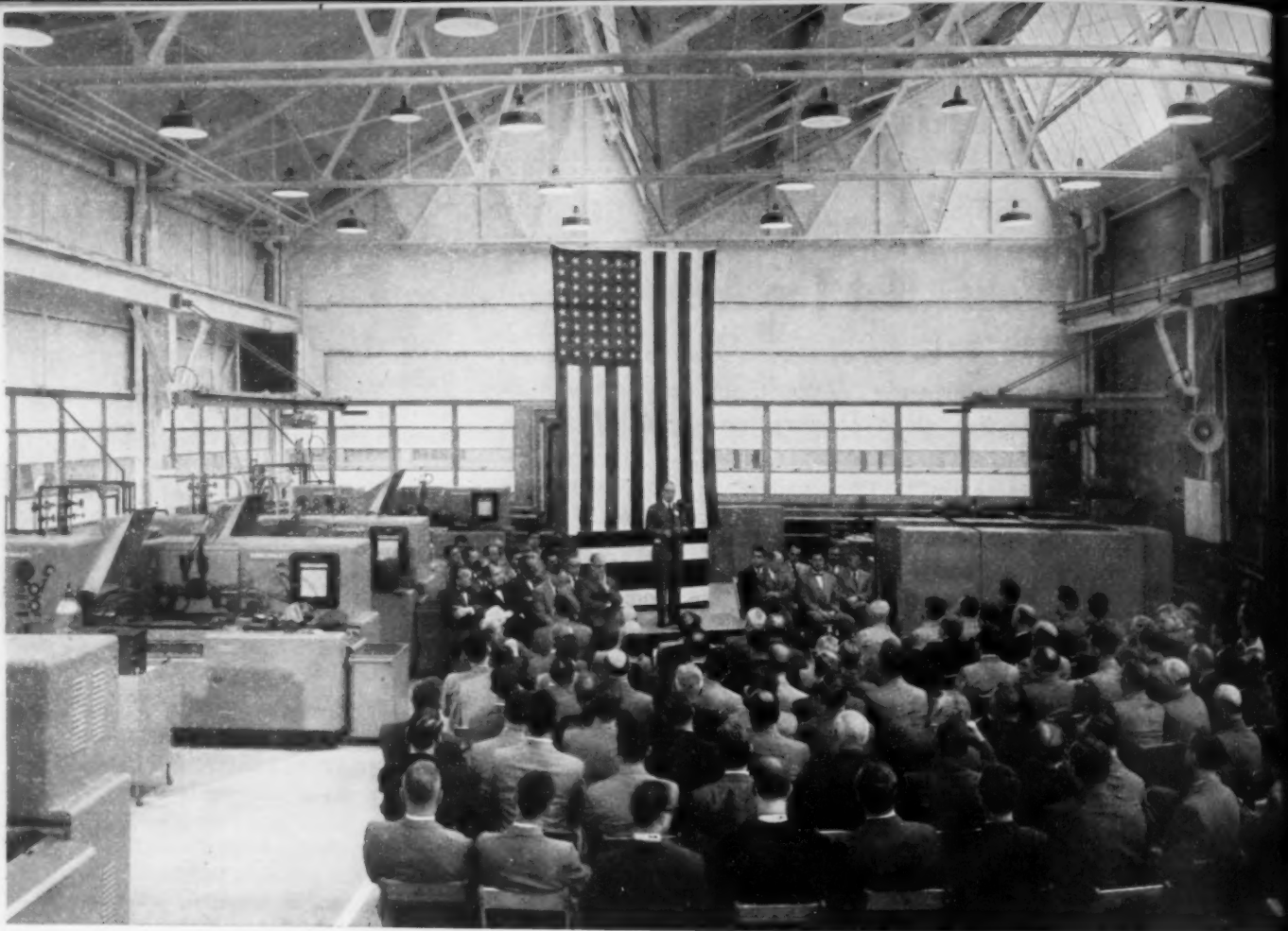
The commission is holding hearings on a railroad request to make permanent the temporary rate increases put into effect last year. These are due to expire next February 28, unless otherwise made permanent or extended.

GOP Aids Labor. . . Far from "hurting" organized labor, state legislators elected on the Eisenhower ticket last November have passed a number of state bills designed to benefit wage earners.

Organized labor had expressed the fear that last year's Republican victory would result in "anti-labor" legislation in many states. This has not come to pass. On the contrary, state legislatures have this week approved a number of bills to raise minimum wages, expand workmen's compensation benefits, and strengthen safety regulations in a number of industries.

U. S. Labor Dept. reports that 14 state governing bodies refused to act this year on "right to work" bills. These bills would permit non-striking employees to continue to work during strikes, and would forbid unions from barring employees who want to work. Organized labor is strongly opposed to such legislation.





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TRUCE: No Draft Cut, Short Says

Chairman of Armed Services Committee says Korean truce will not mean lowering of draft call during the next year ... Conflicts with earlier statement by Wilson.

Signing of a truce in Korea probably will not mean a lowering of military draft calls in the next 12 months, Chairman Dewey Short, R., Mo., of the House Armed Services Committee announced last week.

Mr. Short's statement appeared to be in direct conflict with Defense Secretary Charles E. Wilson's prediction earlier in the week that selective service quotas "might" be cut as much as 35 pct some three months after a truce was signed. But the congressman said he had talked with Defense Dept. and draft officials before making his announcement.

Draft quotas are now running to about 23,000 men per month. An intake at this rate will be needed, according to Mr. Short, to replace those men who will return to civilian life in the next year, even taking into account an anticipated reduction in Army strength.

Fewer in Uniform

The Army now has about 1.5 million persons in uniform. According to Secretary Wilson, this figure will be lowered to 1.42 million by mid-1954, even if the Korean fighting resumes.

Number of men now in the replacement "pipeline" to Korea is about 51,000. Mr. Short held out the possibility that a reduction in this manpower channel could have the effect of lowering draft calls somewhat.

Looking ahead of the immediate military problems, President Eisenhower has nominated three civilians to vacancies on the five-man National Security Training Commission. He has directed this board to report on or before Dec. 1 on the practicability of a universal military training program.

Presidential nominees include Julius Ochs Adler, general manager of *The New York Times* and a

reserve major general; Karl T. Compton, chairman of the corporation, Massachusetts Institute of Technology; and Warren Ather-ton, San Francisco lawyer and past National Commander of the American Legion.

Upon Senate confirmation of these nominees, the President intends to name Gen. Adler as commission chairman. The White House action on Dr. Compton was a reappointment. Military members of the commission are Lt. Gen. Raymond S. McLain, and Adm. Thomas C. Kincaid.

Shift Weapons Testing Division

Weapons testing and development work now performed by National Bureau of Standards is to become a Defense Dept. function.

Commerce Secretary Sinclair Weeks and Defense Secretary Charles E. Wilson made a joint statement regarding the planned

move for four of the bureau's 17 technical divisions, including staff and facilities. The change is expected to affect some 1600 persons.

In the joint announcement, Mr. Weeks said the move would be "the means of strengthening the bureau's basic program." He added that continued weapons research would interfere with the basic functions of the agency. These activities include some pure research and the maintenance of standards of weights and measures.

Study Ways to Shrink Government

New suggestions for saving the money the nation pays in taxes may be forthcoming when the new "Hoover Commission" completes its job.

Big task facing the group is to examine many functions of the government as a basis for deciding which should be retained and which should be revised or eliminated. If the commission comes up with recommendations for dropping or paring down some of the more expensive operations, the way will be opened for economy moves.

Powers of the new commission are much broader than those given former President Herbert Hoover's earlier group, created in 1947. Big difference is that the first commission could advise concerning better methods for the government to continue the jobs it had taken on, while the new one may advise ending some jobs.

Ease Export License Paperwork

A new licensing technique put into effect on July 23 does away with tremendous paperwork and simplifies export business with Latin American countries.

Under the new rules, any exporter can get a time limit (TL) export license which permits shipment of unlimited quantities of commodities on the positive list (except B products) for a 1-year period, provided the customer has purchased \$2000 worth of that commodity over the previous 2-year period.

Must Bargain With New Union

A newly-elected union is entitled to immediate bargaining rights, and these rights cannot be denied until expiration of contracts covering the employees held by another union, National Labor Relations Board ruled this week.

Ruling grew out of case involving the American Seating Co., of Grand Rapids, Mich., and Pattern Makers' Assn. of Grand Rapids.

The precedent-setting decision directs the firm to bargain immediately, upon request, with the union. The pattern workers formerly were represented by the UAW-CIO. Last year, they voted to associate with the AFL. The company refused to bargain until UAW-CIO contract had expired.

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Improves DEEP DRAWING

Production for Radiad*

"We find that the smooth, evenly controlled speed of the Multipress ram does a better job on a wide range of deep drawing operations," says Mr. Ed Foertsch, President of *Radiad Service, Inc., Chicago.

For most deep drawing operations, Radiad, a widely experienced contract manufacturer uses the 50-ton Denison Multipress. A second hydraulic ram mounted in the U-slot base of the press permits up to 8 tons of upward pressure . . . for added cushioning effect on some operations.

"We also gain by pinch-trimming many flared-lip shapes as part of the final draw," Mr. Foertsch added.

Like many other users, Radiad has proved to themselves that Multipress, with its versatility and speed, is the low-cost answer to drawing needs.

There's no hammer-blow impact as Multipress tooling contacts the work. A steady, positive stream of power draws the metal SMOOTHLY into shape. Stroke length, ram speed, and pressure limits are easily pre-



set to suit each job, or to the flow characteristics of any metal. And the Multipress ram can be set to reverse the instant a pre-set pressure is attained.

As a result, deeper draws can be made. Multiple-stage jobs can often be handled in half the draws required by other equipment. There's less wear and tear on tooling. Costly dies last longer, are less subject to damage. And the need for pre-draw annealing is often eliminated.

Dual Multipress controls increase safety on drawing jobs at Radiad.



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Many additional features make Multipress a profitable investment; not only for drawing, but for broaching, bending, forming, stamping, staking, crimping, flaring, riveting, and many other operations. Multipress is built in both bench and floor models; one-ton to 75-ton capacities. Manual or automatic controls for any requirement. Standard Multipress accessories available for many specialized operations. Send for a copy of "MULTIPRESS, and how YOU can use it" or write for information covering your specific needs. There's no obligation.

The DENISON Engineering Company, 1158 Dublin Road, Columbus 16, Ohio

West Coast Report

Western Steel Mills Keep Rolling

Coast steelmakers keep production high despite extensive maintenance, expansion . . . CF&I switches mill motors in 21 days . . . Kaiser project stresses safety—By T. M. Rohan.

Western steel mills aren't losing a minute's production where they can help it.

Colorado Fuel & Iron Works in Pueblo last week was back in production on its 25-in. mill after only 21 days' downtime for a complete ac to dc reversing motor changeover, new furnace, new air conditioned motor room, new scale pit and other improvements.

Best Since War . . . Ralph H. Wright, veteran Westinghouse steel mill engineer from Pittsburgh, called the \$2.5-million job "the fastest motor changeover in the steel industry since the war."

And at Kaiser's 86-in. Fontana hot strip mill, badly needed steel continues to roll out amid the staccato of air hammers raising clouds of dust, temporary wiring all over the floor, and workmen hurrying about as two stands are added.

Safety First . . . The mill is run intermittently during construction. When it is down, plates are run on the preceding mill. The stands are being added to permit rolling drum stock down to 18 ga. A dangerous job at best, no accidents have occurred in a project for which most mills would schedule a complete shutdown.

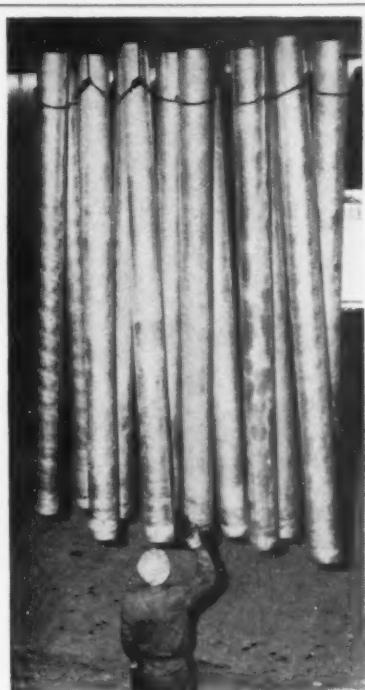
The CF&I project will permit the mill to roll rounds from 3½ to 8½ in. for the new seamless tube mill starting pilot runs Aug. 15. Replacement of the 70-rpm constant speed motor with a 50-210 rpm dc motor will double former production to about 50,000 tons per month.

Mill Is Adaptable . . . Thus CF&I will get rounds from its existing mill plus the regular bars, plates

and angles now being turned out. The mill will now roll as before or as a 2-high reversing mill.

The ac to dc changeover involved the new motor room, motor-generator set, liquid rheostat, main dc control panel, exciter set, regulating devices and about 10 miles of wiring. In addition, cranes now put blooms on the furnace skids, similar to the U. S. Steel Geneva plant.

Plan Smooth Start . . . On the discharge end, cobbles which formerly ran on the floor now run out to the billet yard. Spindle carriers have been added between stands, the collector system improved and a new scale pit and trench installed.



FIRST ALUMINUM EXTRUSION INGOTS in the Pacific Northwest were produced recently at Aluminum Co. of America's Vancouver, Wash. plant.

Vice-president Jay Martin expects that with increased mill speeds, tonnage stockpiled during the shutdown can be rolled in time for a smooth tube mill start-up.

No Cutbacks . . . Hall-Scott Div. of ACF-Brill at Berkeley, Calif., largest western engine makers, added another \$1.25 million order for V-12 marine engines last week.

Total backlog was pushed to about \$6.5 million and 100 extra workers will be needed. Engines rated 650 hp are convertible for fresh or salt water operation.

Hall-Scott is also now tooling up for production of 105 mm gun recoil mechanisms on which orders were upped recently from \$4.5 million to \$5.5 million. Production is scheduled to start in December.

The firm is also getting air-minded with production of detail parts for Bell and Hiller helicopter transmissions scheduled to start soon.

Outlook Cloudy . . . Western steel men looked to their markets last week and saw a few clouds on the horizon. Western demand for sheets, tinplate, tubes and plates continues strong as ever. But a few holes are beginning to open.

Pessimistic sales people can look to loose used car markets, heavy distributor inventories, continued construction strikes and one of the lowest scrap markets in the country.

Wire products and fasteners have had a steady decline in demand as well as farm equipment in general, and cancellations have been made. Reinforcing bars are also loose except in the Pacific Northwest due to dam construction.

New Projects Heartening . . . But new projects now opening up, such as the \$175-million, 1000-mi. 30-in. natural gas transmission line from west Texas to the California border, are heartening.

M.T.

When Does a Band Saw Become a Machine Tool?

There are basic requirements of accuracy and proficiency that separate a "machine tool" from other power tools . . . characteristics such as those which distinguish a tool maker's screw-cutting, precision lathe from the woodworking lathes used in grade school manual training classes. Among metal-cutting band saws, only the MARVEL No. 8 Series Band Saws can qualify as **machine tools** for only MARVEL Band Saws have the following capabilities and features:

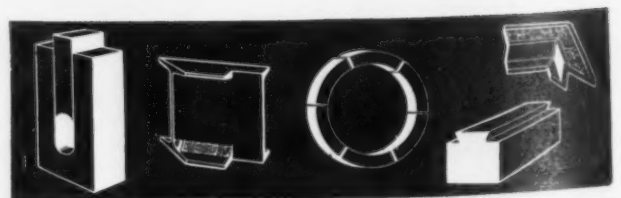
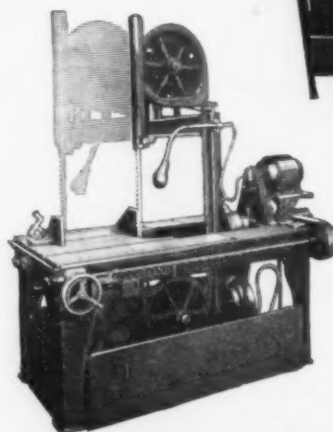
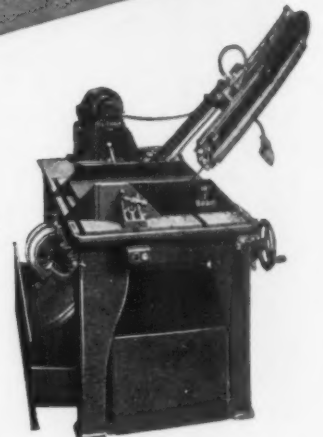
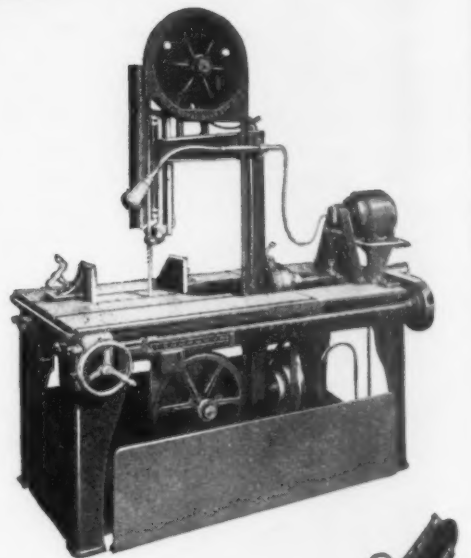
- 1 Angular cutting from 0° to 45° right or left without moving the work. Built-in protractor.
- 2 Vertical blade power-fed into material—permits recentrant cuts, notching, mitering, keyway sawing, etc.
- 3 Automatic power or manual feeds at the flick of a finger.
- 4 Feed pressure adjustable even when machine is running. Indicated in actual pounds of pressure.
- 5 Work clamped to table of machine. Working area more than 835 square inches.
- 6 Tee-slotted table facilitating clamping down of odd and irregular shaped pieces; easily supports heavy work or large and long structural shapes. Standard vise chucks work on either side of blades.
- 7 Automatic blade tensioning device. Every blade at uniform tension regardless of operator efficiency.
- 8 Adjustable upper guide roller holder insuring minimum section of unsupported blade on all sizes of material. Quick acting.
- 9 Built-in coolant system with delivery at blade entry point. Pump driven without belt or gears.
- 10 Replaceable vise ratchet and table wear strips of tool steel. New saw performance at all times.
- 11 **LARGE CAPACITY.** Standard: 19½" x 18¾". High column: 25½" x 18¾". Handles 99% of all work.

Before buying any metal-cutting band saw, be sure to see the versatile MARVEL No. 8. Your local MARVEL Field Engineer will demonstrate its significant "machine tool" characteristics and their application to your work, with costs, savings, cutting speeds and methods. This technical service is provided, without obligation, in the interests of better metal sawing.

If you prefer to "study it out for yourself," write for the MARVEL C-49 Catalog.

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Machine Tool High Spots

Renegotiation Extension Hangs Heavy

Passage of 1-year addition to life of Renegotiation Act seems certain if bill is voted on . . . Extension is regarded as unwarranted . . . Profits are low—By E. C. Beaudet.

Manufacturers of machinery and equipment were dealt a hard blow last week as the House of Representatives voted a 1-year extension of the Renegotiation Act which was due to expire Dec. 31.

The House-passed legislation was sent to the Senate Finance Committee, and if the bill goes to a vote, predictions are that it will be passed. Presidential approval of the measure is also expected.

Change Bill . . . One major change was made in the bill by the House. Under the new proposal subcontractors building machine tools would be subject to renegotiation only to the extent that a machine tool is used in the defense program.

While many senators privately do not favor extension of the law, they are expected to vote for it, if it is presented. Reason is that any bill which supposedly takes abnormal profits out of defense business sounds good to constituents at home.

May Be Delayed . . . Main hope of capital goods producers is that the bill will not be put to a vote because of a log jam of legislation which must be acted upon before the current session of Congress breaks up.

Postponing a vote on the extension would give machinery and equipment manufacturers more time to organize opposition to the bill. If the matter is deferred until the next session of Congress, the industrial picture might be changed sufficiently to provide them with an even stronger case.

MAPI Takes Lead . . . Spearheading opposition to the bill is

the Machinery & Allied Products Institute. MAPI believes that because of the drop in military spending and the increased competition within industry, extension of the Renegotiation Act is unwarranted.

MAPI points out that the past and future size of the current defense program is much smaller than in World War II. During the peak war years government purchases accounted for 35 pct of total industry output. Today defense purchases represent only 8 pct of industry's total production of various goods.



This 7 x 20 ft Pratt & Whitney Keller Duplicator is shown being installed at Convair's Fort Worth, Tex. Div. Cutting head and tracer are attached to carriage where operator and control panel are located.

Military Spending Slumps . . .

Adding to this is the fact that military buying is definitely on the downgrade. New government purchasing and construction contracts next year will run about \$30 billion as compared with \$45 billion in 1952 and about \$35 billion this year.

Competition within the machinery and equipment industry is steadily increasing, making renegotiation less necessary than in periods when a high volume of government orders flooded the market.

Production Is Up . . . Competition is further strengthened by the increased production of capital equipment. Currently running at a rate of 155 pct of the pre-Korean level, the boost in output means the government has a better opportunity to shop for the right price.

That the government can obtain equipment at reasonable prices is shown by the industry's reaction to price decontrol, MAPI believes. Wage increases of 5 pct and materials increases of 3 pct during the past year have resulted in an increase of only 1 pct in machinery and equipment for the same period.

Another argument: Since 1939 costs of all industrial commodities have risen 95 pct as compared with 73 pct price increase for machinery and equipment.

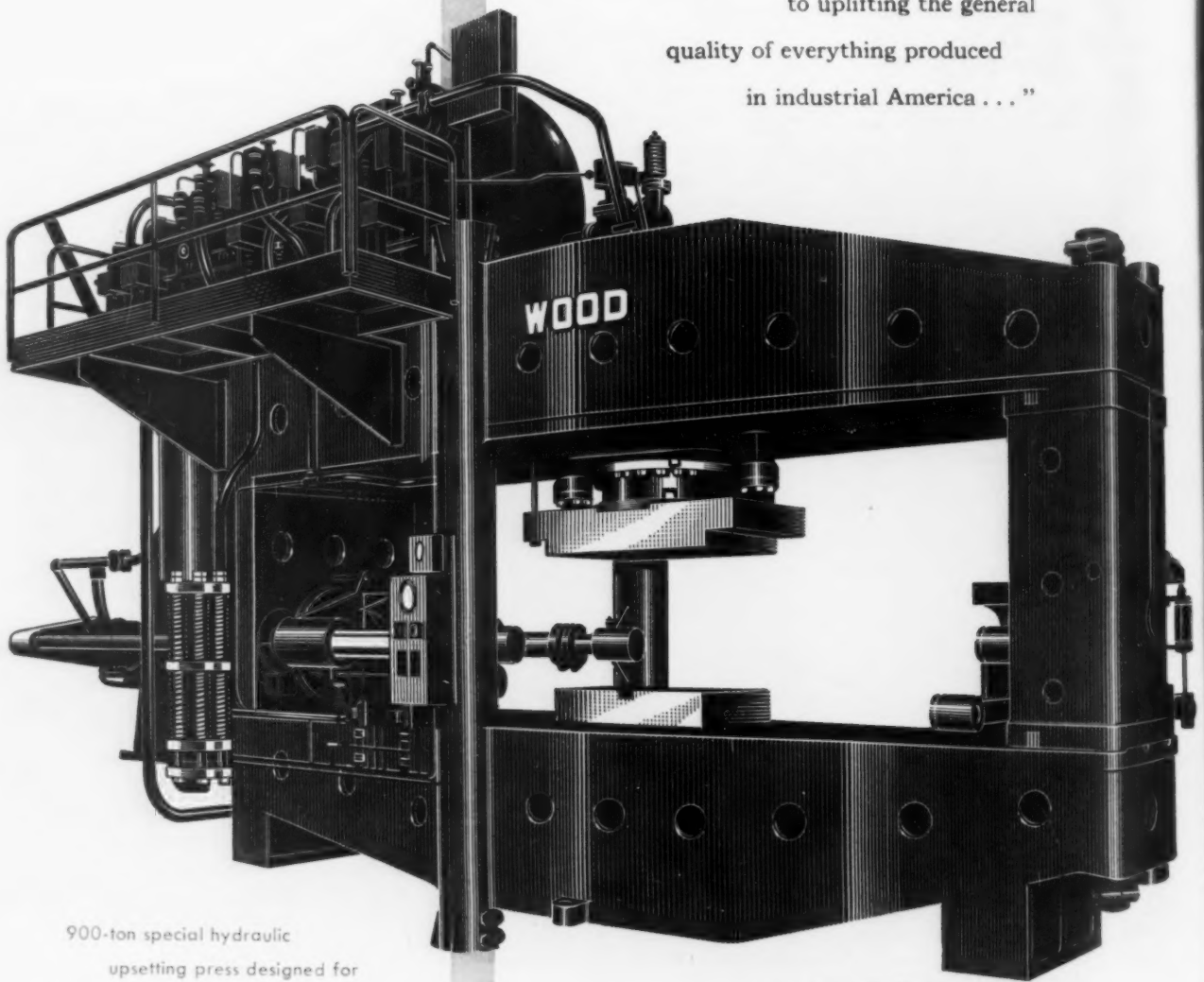
Profits Are Low . . . Purpose of the renegotiation law is to restrict abnormal profits, but earnings of capital goods makers and manufacturing industries are at a lower rate now than they were just before the start of the Korean War.

During the second quarter of 1950, earnings of capital goods makers averaged 12 pct of sales before taxes and 7 pct after taxes. In the last quarter of 1952, these manufacturers earned 10 pct of sales before taxes and only 4.6 pct of after taxes.

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REPORT TO MANAGEMENT...

Sold more and earned more

Business and industrial firms took a quick backward glance last week and were generally satisfied with what they saw. There was a flood of half-yearly financial statements which showed that the majority of companies sold more and earned more than they did a year ago...And the government, taking stock of the overall national economy, found output, consumption and investment moving at peak rates.

Is a recession coming?

In spite of these encouraging reports and indications that most businessmen are quietly optimistic about the immediate future, some professional gloomsters were straining to find recession signposts...The depression pundits say shortages are over, that from now on sellers will have to compete for orders. They point to the 15 pct drop in "bellwether" farm prices, say demand for refrigerators, washing machines, radio and TV sets has dropped, causing inventory pileups and production cuts.

Cites trouble spots

Other slump symptoms being tom-tom'd by alarmists: New housing starts are slowing, overabundance of used cars is causing drastic price cuts...To these they add: Business failures in June were the highest in 3 years, money is harder to get, exports are off, defense cutbacks will bring unemployment.

Businessmen are confident

But most businessmen are not taking the pessimists too seriously. National Industrial Conference Board surveyed 189 industrial executives and found less than one in four who believes his company's profits this year will be less than in 1952... Nearly 60 pct said dollar sales in the second half will top the rate for the same period last year--about half expect to reduce the ratio of inventories to sales during the next 6 months.

Consumers spend more

Dun & Bradstreet reported consumer spending in the early part of July was running ahead of last year's pace. For the month of June, Dun & Bradstreet's trade barometer read 136.5, a 7 pct increase over the same month a year ago.

Tight money not a problem

Tipoff that the current tight money policy is not cramping expansion is the increase in commercial, industrial and agricultural loans. Federal Reserve Board said business loans were upped \$61 million during the week ended July 15. Loan increase since last July is \$1.843 billion.

Have more to spend

Also muting sour notes from the "it's gotta get worse" faction was a statement by the Commerce Dept. last week that business firms have indicated they will continue a high rate of fixed capital outlays...In addition, the department called attention to the high volume of consumer savings and the increase in gross business savings.

Purchasing power is stronger

Other signs of strength: If national salaries and wages continue at the present rate, they will total \$15 billion more than during last year. This is an increase of 8 pct, and since prices and taxes have remained about the same, the increase really amounts to an 8 pct rise in purchasing power.

What about the automen?

Concern over the auto industry's plight seems to be exaggerated. Industry spokesmen say abnormal inventories of new and used cars will be worked off and the industry will be back to normal in 6 months...Automotive output during the next half-year is expected to be 2½ million cars which means demand for steel will remain strong.



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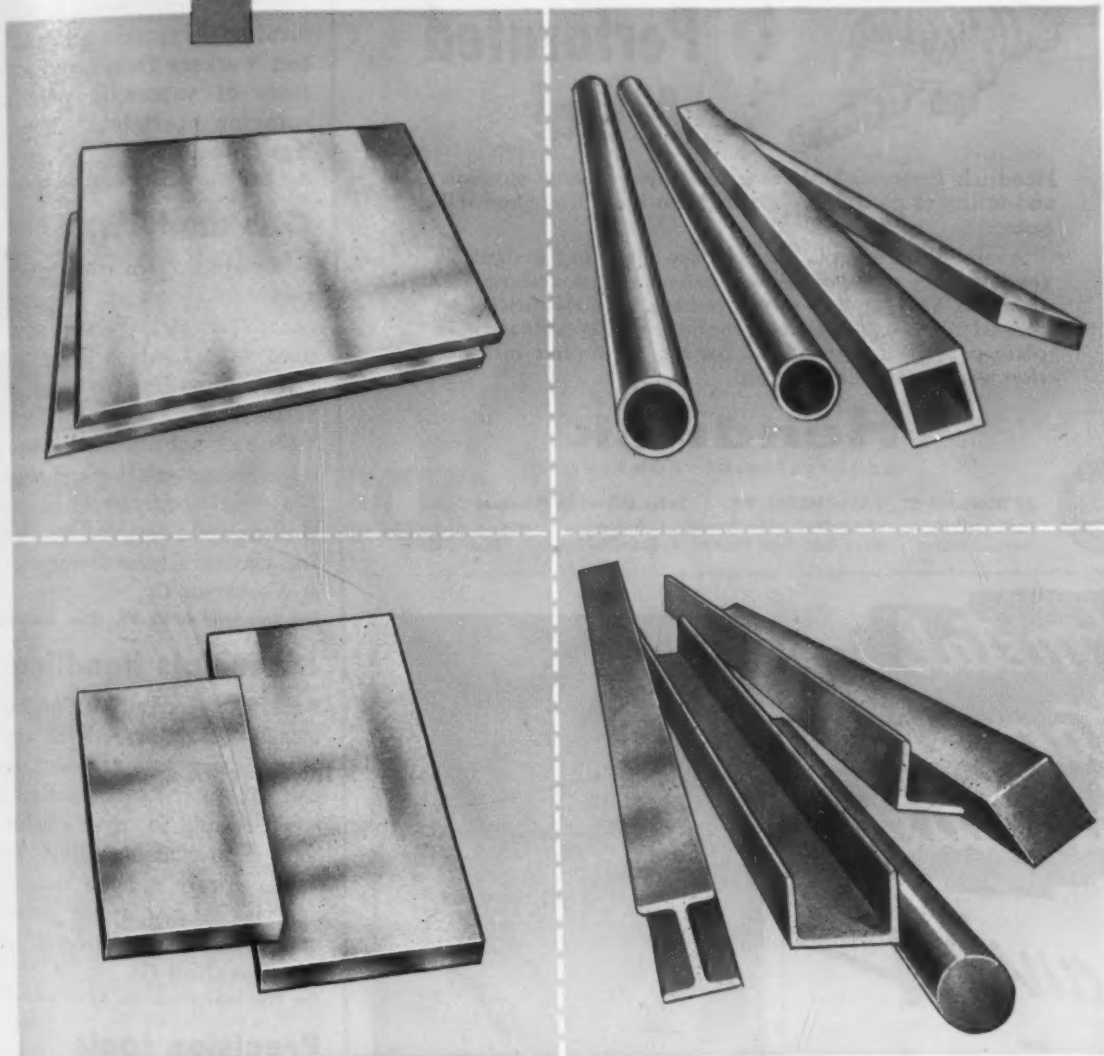
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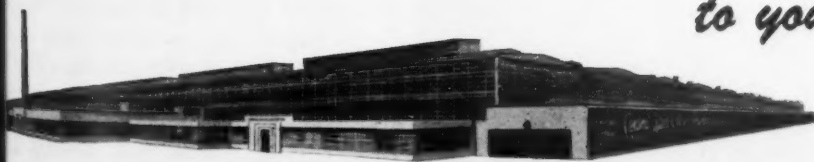
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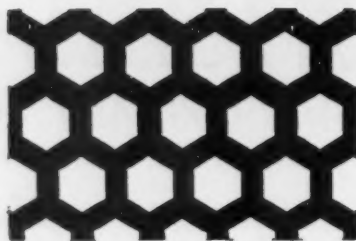
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Plant safety

Protective hoods designed especially for use with Mine Safety Appliance Co.'s dust, paint and chemical respirators are pictured and described in a new 2-p. bulletin. Catalog information is included to facilitate ordering protective hoods and respirators. Typical uses are to protect workers from light concentrations of vapors in painting and spraying operations. *Mine Safety Appliances Co.*

For free copy circle No. 12 on postcard, p. 65.

Gas analysis

Complete information about electronic Speedomax recorders and controllers which are now being used with Leeds & Northrup Co.'s cell assemblies for gas analysis tests is given in an 8-p. folder. This new publication lists performance characteristics and shows how the L&N equipment incorporates the thermal conductivity method for accurate measurements. *Leeds & Northrup Co.*

For free copy circle No. 13 on postcard, p. 65.

Materials handling

American MonoRail Co. has just issued the latest in its series of case history reports describing how use of American MonoRail equipment results in more efficient, less costly materials handling. The new series covers a wide range of industries and outlines some very interesting case histories. *American MonoRail Co.*

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Precision tools

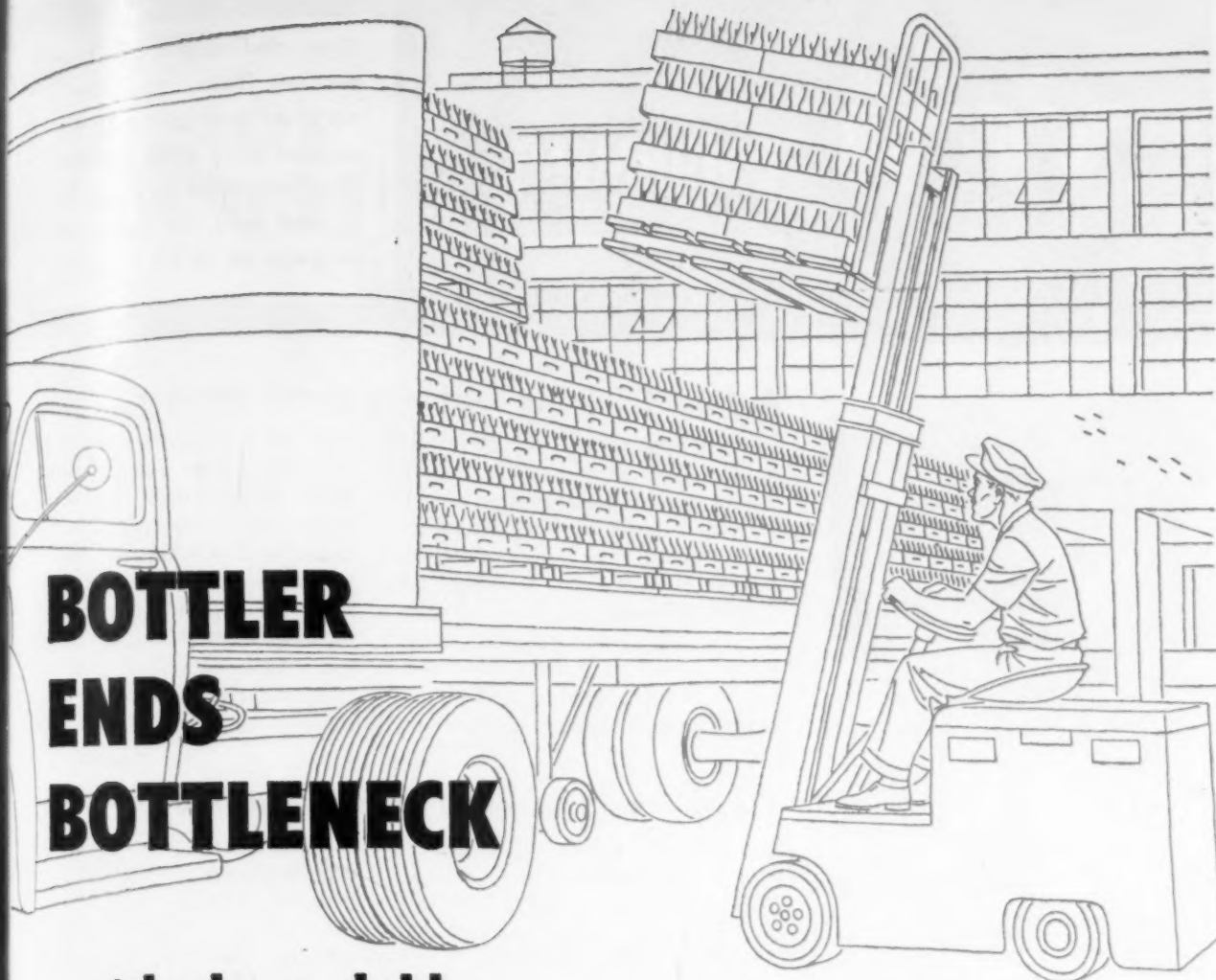
Levin precision lathes, micro-drill presses and other machine tools for production of small parts are described in a new catalog. Illustrations and specifications are included. *Louis Levin & Son, Inc.*

For free copy circle No. 15 on postcard, p. 65.

Speed reducers

Brief descriptions of Universal Gear Corp.'s speed reducers are given in an 8-p. circular. Included are illustrations of actual installations and applications. *Universal Gear Corp.*

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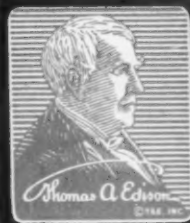
HEAVIEST WORK comes at day's end for an eastern bottler of one of the country's most popular soft drinks. After batteries have been powering fork trucks all day serving bottling machinery, fifty highway delivery trucks must be unloaded and re-loaded.

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BEFORE RECHARGING, batteries have sometimes remained in service nearly sixteen hours continuously. Spare batteries are used only when operations continue far beyond an eight hour shift. Further, the ability of Edison batteries to take a quick boost-charge during

lunch hour has been a big factor during the busy season.

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Automatic firing features steam cleaner

Turning on two electric control switches places a new automatic steam cleaner in operation. One controls a specially designed automotive piston-type pump, while the second ignites the non-clogging Kelite automatic oil burner. The burner uses a wide range of fuels, from gasoline to number two diesel fuel without changing orifices or burner parts. Another feature re-

sults in fuel savings by trapping radiated burner heat to raise the water temperature 50° before it enters the heating coil. Other automatic controls safeguard the cleaner by turning off the burner if water supply fails, and preventing the burner from being fired unless pump is in operation. Capacity is 150 gph. *Kelite Products, Inc.*

For more data circle No. 17 on postcard, p. 66.

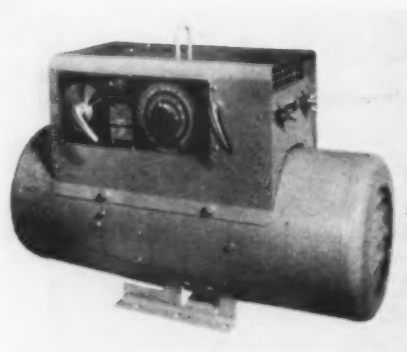


Flexible shaft grinder runs by gasoline engine

The new Strand mobile gasoline engine powered grinder was designed to eliminate the need for air compressors and where electric power is not available for grinding, rotary filing and other cutting or finishing operations. The 5 hp gasoline en-

gine is mounted on a wheelbarrow type truck. A 7 ft flexible shaft is attached directly to the shaft of the motor. Hand spindle takes grinding wheels up to 10 in. x 1½ in. *Franklin Balmar Corp.*

For more data circle No. 18 on postcard, p. 66.

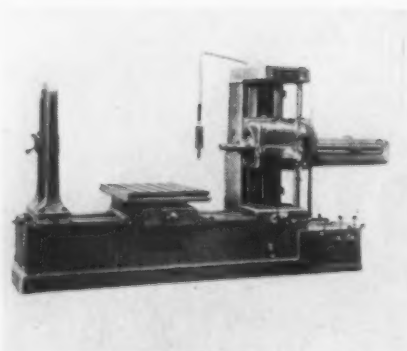


DC generator welders have been redesigned

New one-dial control on 200, 300 and 400 amp dc generator welders provides close control of the welding current by means of an electrode size selector and a large, easy-to-adjust dial for minor current adjustments. Convenient current control is made possible by setting the electrode selector to size of the electrode to be used, then turning the

calibrated current dial to the heat desired. Reversing switch provides quick, easy change of polarity. Magnetic motor starter is a magnetic across-the-line contactor operated by pushbutton. Two automatic-reset overload relays protect against overloads and low line voltage. *Metal & Thermit Corp.*

For more data circle No. 19 on postcard, p. 66.



Boring mill for tool room and production work

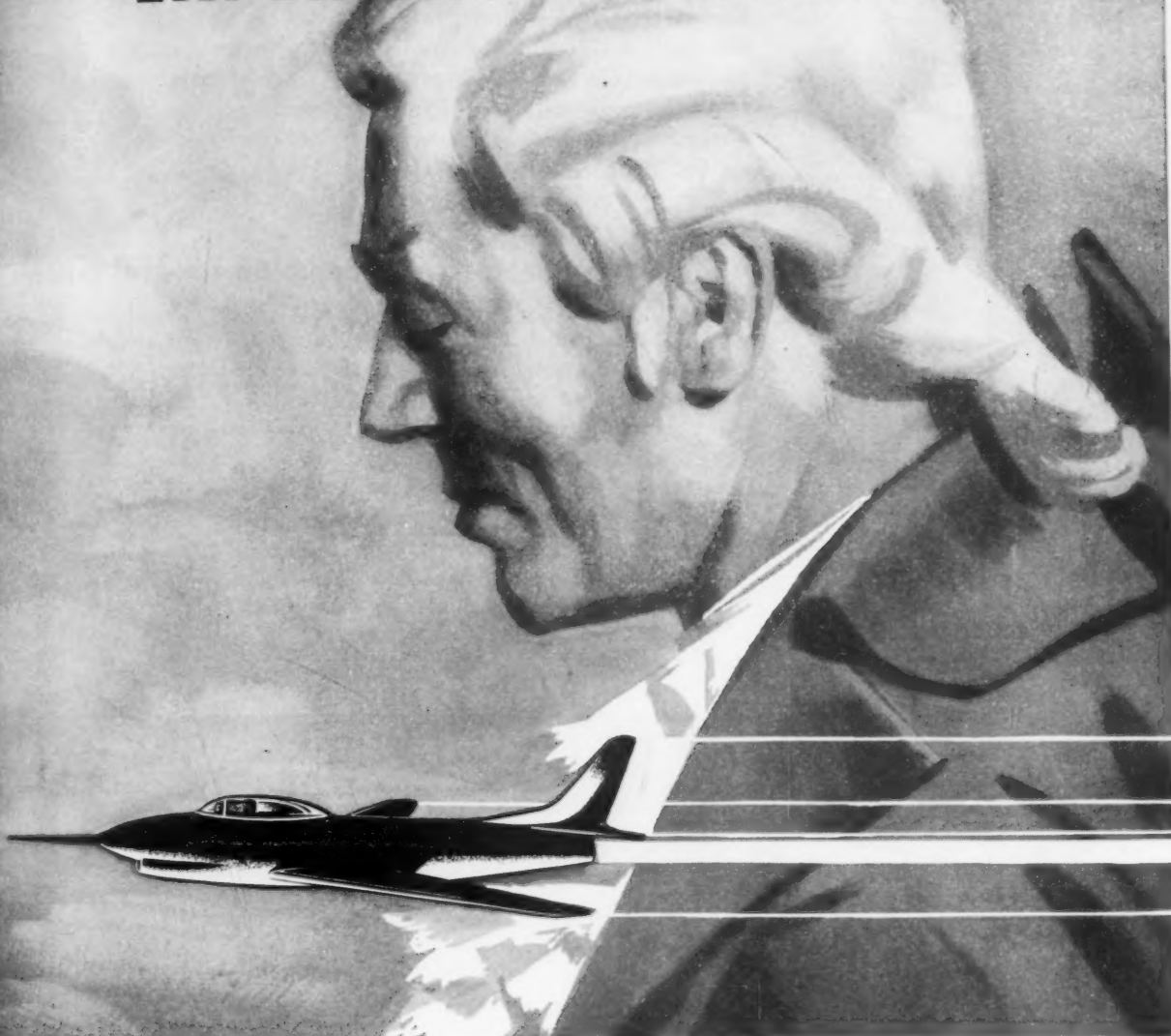
The 31 x 39-in. table top of the Wotan 3-in. horizontal boring mills swivels a full 360° and the machine is capable of 18 spindle speeds ranging from 17 to 910 rpm. Eighteen feeds are provided from 0.001 to 0.500 ipr. Longitudinal feed and cross feed can be read to 0.001 in. The mill is equipped with power rapid traverse in all directions. Ni-

trided 3-in. spindle is hardened and ground throughout. Face of the spindle sleeve conforms to No. 50 U. S. Standard for direct mounting of heavy cutter heads. Distance from table top to spindle center is 29½ in. Higher columns can be furnished for 35 or 43 in. vertical capacity. *Parker Machine Co., Inc.*

For more data circle No. 20 on postcard, p. 66.

Turn Page

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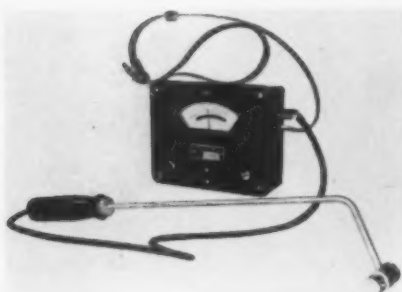
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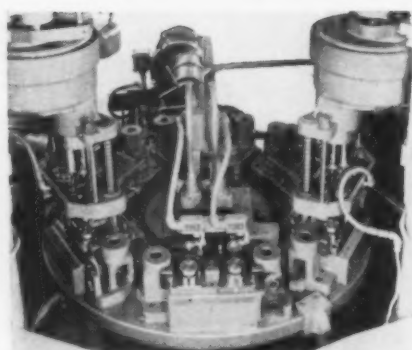


Tin content indicator gives quick analysis

This portable, direct reading indicator, which has an easy-to-handle plug-in type sensing unit, is used for quick analysis of the lead and tin content in solder for process control. Improvements in both the sensing unit head and the meter movement increase the durability

of the indicator. The instrument will show the correct percentage of tin in the sample by measuring the difference in temperature at the transformation point of the lead standard and the lead-tin sample. *Wheelco Instruments Div.*

For more data circle No. 21 on postcard, p. 62



440 pistons processed per hr on special machine

New automatic 6-station indexing-type machine can drill, ream, mill and countersink steering gear pistons at the rate of 440 per hr at 100 pct efficiency. Specially designed fixtures and multiple spindle heads account for the high production rate. Feature of the fixture and clamping mechanism is the dead-center indexing table mounting a

stationary cam track. Rollers attached to the mechanism pass through as the table indexes from station to station. Limit switches make it impossible for the machine to operate unless parts are clamped in place. The machine is constructed with standard bases and columns. *Turner Brothers Inc.*

For more data circle No. 22 on postcard, p. 62



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CHIP-TOTE . . . eliminates machine down-time at THOMPSON PRODUCTS, INC.

Machines produce more when **MAY-FRAN CHIP-TOTES** permit continuous operation. **CHIP-TOTE** automatic scrap conveyors remove borings, turnings and chips from high-production machine tools while they are operating . . . thus eliminating shut-down for manual scrap removal.

At Thompson Products, Inc., Cleveland Plant, **CHIP-TOTES** speed production by continuously conveying the large volume of chips generated by Sundstrand automatic lathes from machine to tote boxes. Operating speed of the **CHIP-TOTES** is synchronized with metal removing capacity of lathes to assure steady jam-free flow of scrap. In addition, the **CHIP-TOTES** provide for drainage and return of coolant.

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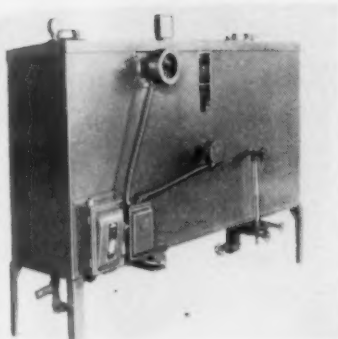


Bending machine speeds up piping installations

Designed for power application to the Type A-30 hand bender, the new 2PBR is engineered to bend $\frac{1}{2}$ to 2-in. U. S. Standard pipe at radii approximately five times the pipe size up to 180° . Its capacity covers a wide range in general use for maintenance bends, indirect heating conduit bends and for general plant and property maintenance

where radii within capacity of the machine can be used to eliminate fittings and to speed up piping installations. The complete unit includes 2 hp motor and drum type reversing controller, and all rollers and quadrants for fixed radius bends. *American Pipe Bending Machine Co.*

For more data circle No. 23 on postcard, p. 65.



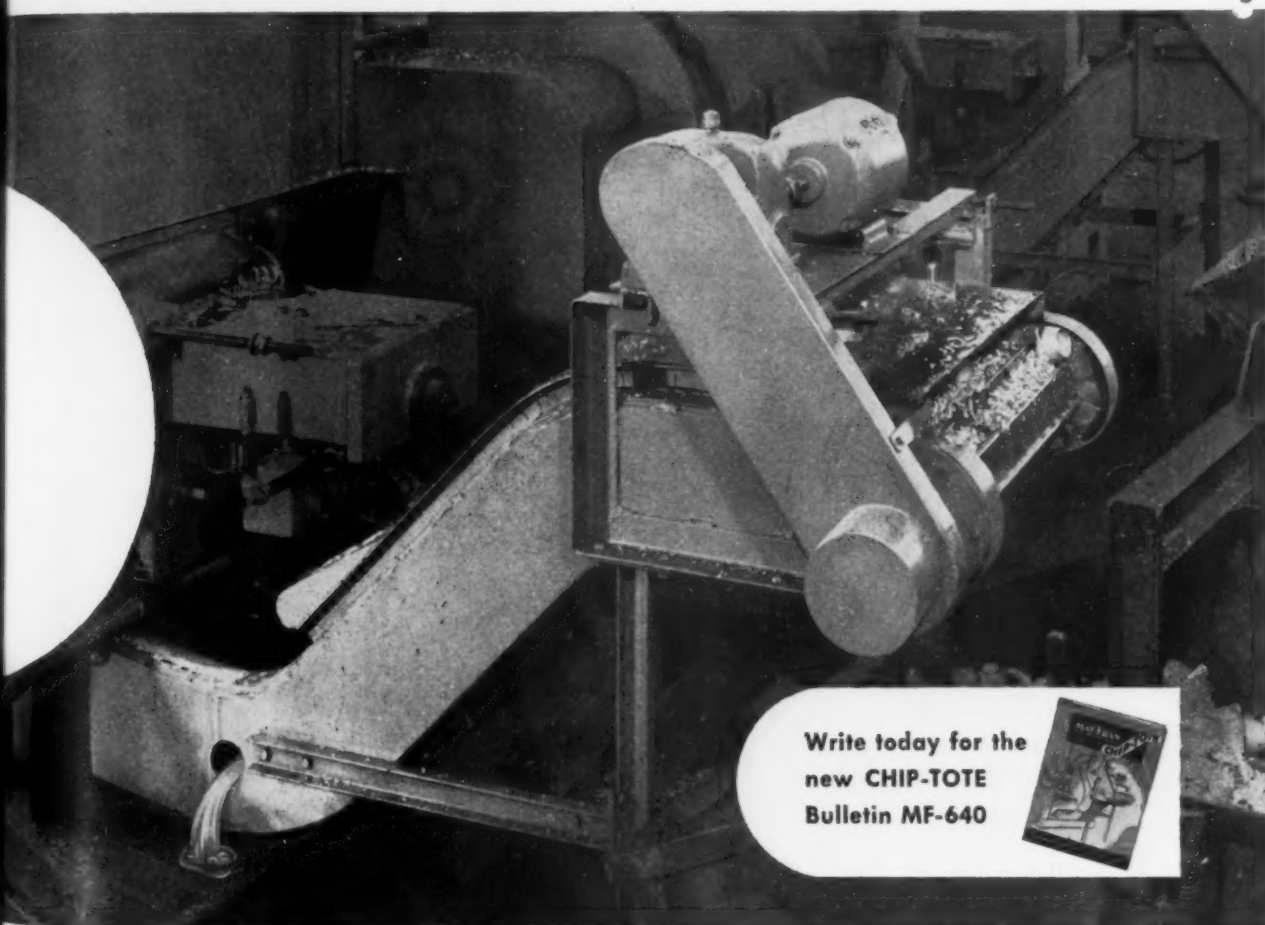
Separator removes moisture from vacuum pump oil

Redesigned Houdaille Dri - Pure water-oil separator is effective in removal of moisture from vacuum pump oils, reducing pump downtime and increasing overall operating efficiency of vacuum pumps. Dri-Pure features two filtering compartments using Palconia (cellulose fiber) and Cranite (fullers earth) filtering media, plus a thermostat-

ically controlled heating and settling tank. Passage of the oil through these sections effects the oil filtration and water separation. Quick-opening lids over both filtering compartments offer access to handy, interchangeable filter cartridges. *Honan-Crane Corp.*

For more data circle No. 24 on postcard, p. 65.

Turn to Page 76

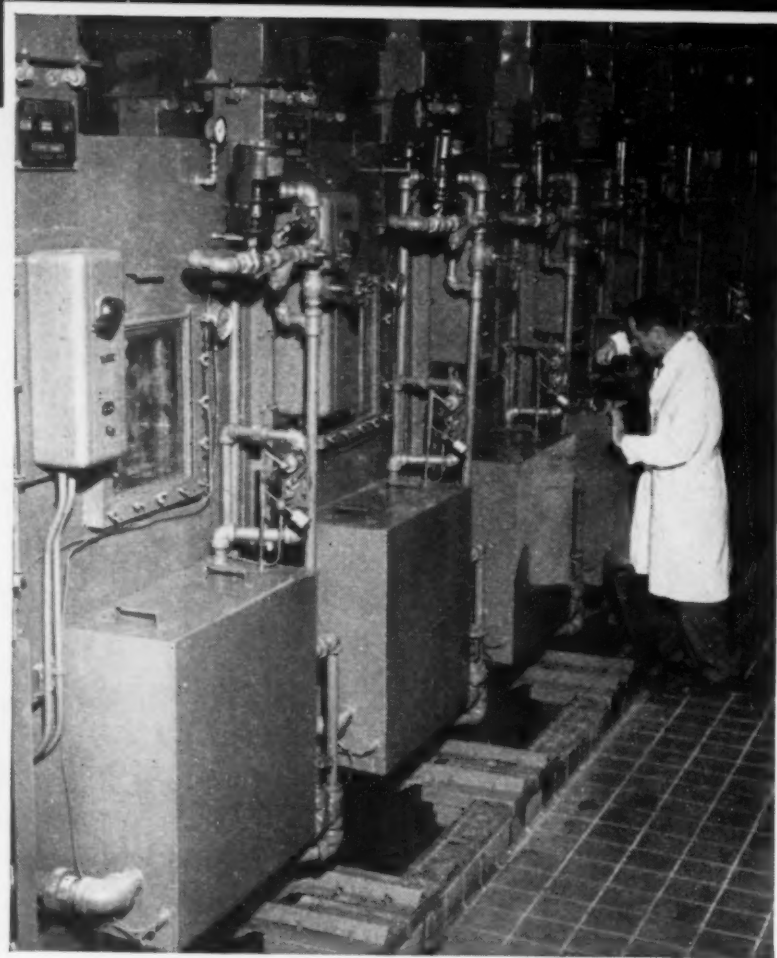
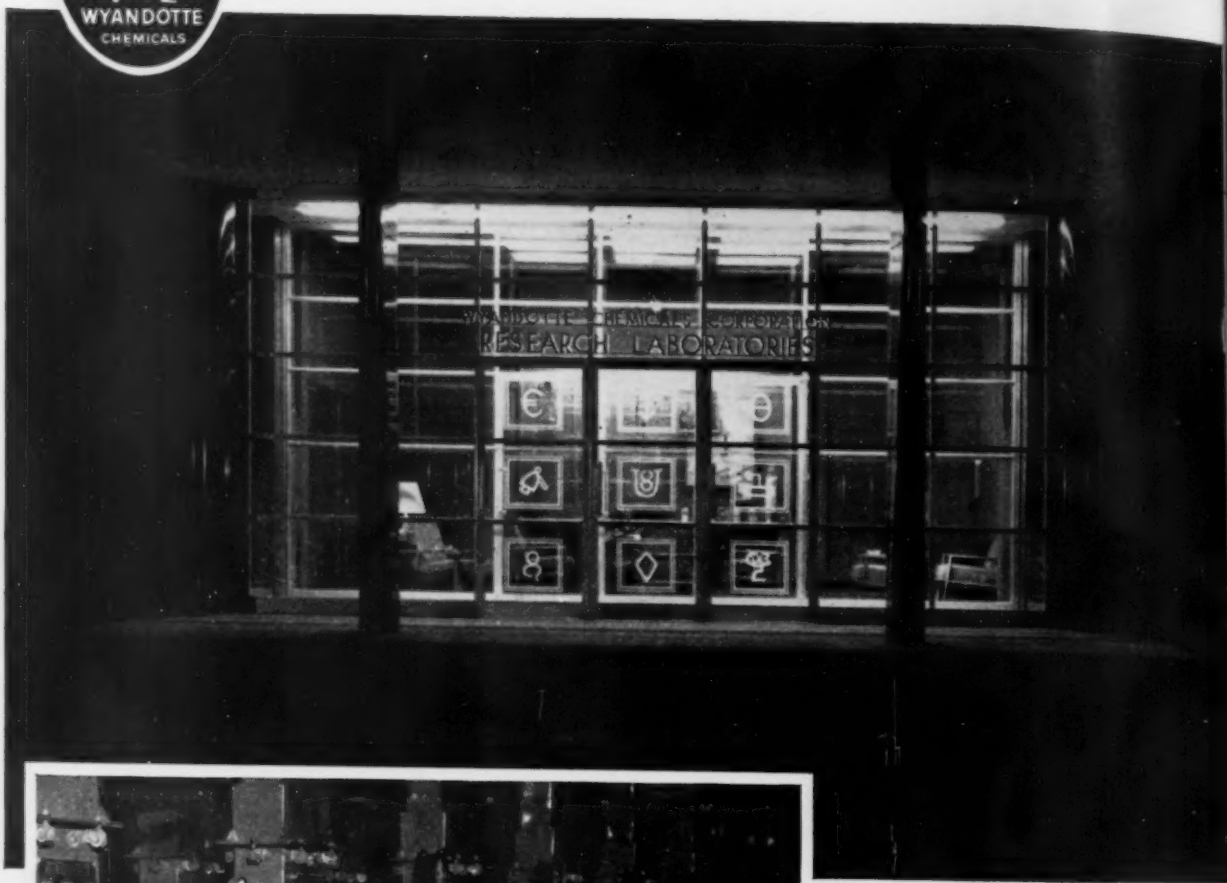


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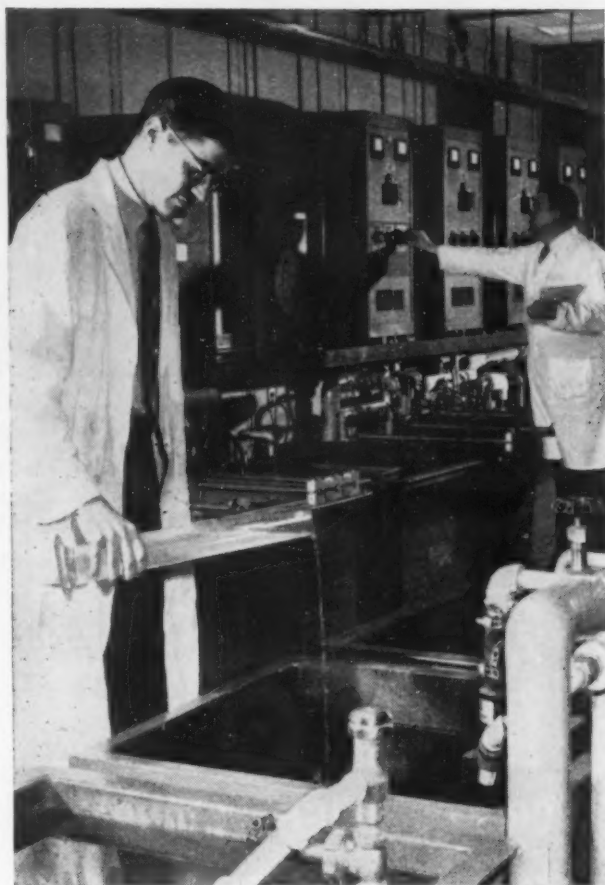
**Wyandotte's new research building contains
the latest in industrial cleaning equipment
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Wyandotte has spent millions of dollars and has more than 63 years' experience building products to give you the highest-quality, lowest "use-cost" metal cleaning obtainable. Now, we've added a new research building to project the performance of these fine products to your future requirements.

Wyandotte's new research building houses complete and up-to-date metal cleaning laboratories. There are cleaning and plating tanks, a multistage spray washer, the latest equipment for working with radioactive tracers, burnishing barrels, polishing and buffing lathes, and a variety of other equipment. All are used in the development and evaluation of metal cleaners, paint strippers, acid treatments, spray booth compounds, phosphating compounds, and aircraft and railroad cleaners of all types.

Our metal cleaning research and product development methods, already extensive and probing, will be further strengthened. You can be sure that every Wyandotte product you use has been research developed, thoroughly laboratory tested in production size equipment, and exhaustively field checked!

The new facilities will also enable us to handle your individual problems even faster and better than before. The services of our trained technical representatives are always available. Let them be the link between your plant and our new research facilities, to help give you better, lower-cost metal cleaning. Call Wyandotte today. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Also Los Angeles 12, California.*



A number of the 18 cleaning and plating tanks, with separate rectifiers, in Wyandotte's new industrial pilot lab. This equipment provides an opportunity to study cleaning before copper, nickel, chrome, cadmium, lead, zinc and silver plating. Test pieces may be taken through any desired cleaning and plating cycle in order to evaluate experimental cleaners or solve production cleaning and plating problems.



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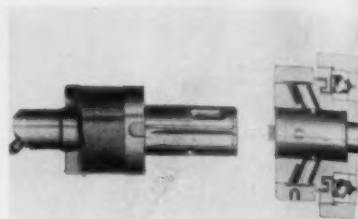
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New Equipment

Continued

Quick-change spindle

Known as the B F spindle, a new quick change, high precision spindle incorporates a version of the Beaver tool holder built integrally with the spindle. It is stated tools can be changed in less than 10 sec with such accuracy that hole sizes may be repeated within ± 0.0001 in.

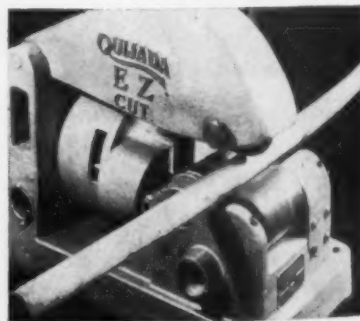


without resetting the boring tools. Straight shank adapters are used to hold tools which do not have Beaver shanks. Available as extra equipment on Fosdick jig borers and automatic position machine, the B F spindle can also be adapted to machines in the field. *Fosdick Machine Tool Co.*

For more data circle No. 25 on postcard, p. 61.

Pipe cutter

Power driven rollers on a new portable pipe, tube and conduit cutter revolve around the pipe. Cutting is continuous, slippage is eliminated; and the high speed tool steel cutter wheel does not wear in one spot. A single sharpening is said to give



thousands of clean, fast cuts. The cutter handles pipe from $\frac{3}{8}$ to 2 in. and tubing from $\frac{5}{8}$ to 3 in. Adjustable roller type pipe supports allow any length and size pipe to be cut without changing supports. Foot control switch leaves operator's hands free to handle the work. *Qujada Tool Div. of Gaines-Collins.*

For more data circle No. 26 on postcard, p. 65.

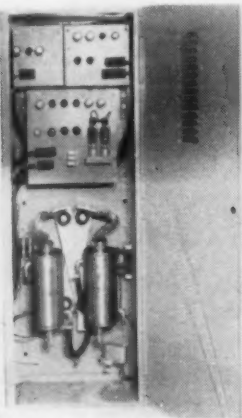
Fluteless drill

For drilling plastics and shallow holes in cast iron a new fluteless carbide tipped drill consists of shank of drill rod between 50 and 60 pct of the diameter of the carbide tip. Shank and tip are joined together by brazing. Due to the strength of the brazing alloy employed it is unnecessary to provide steel pockets or similar guides for the tip. Drill sizes are 13/64 to 11/16 in. *Hayden Twist Drill Co.*

For more data circle No. 27 on postcard, p. 65.

Welding control

New synchronous-precision control for fast high-quality resistance welding of hard-to-weld metals is adaptable for bench, spot, seam, or combination welders. It accurately regulates the value of the current



and length of time it flows, to help assure high quality welding especially where short durations of weld current are necessary for high speed applications. Basic components are an ignitron contractor, heat control, weld timer, and sequence timer. *General Electric Co.*

For more data circle No. 28 on postcard, p. 65.

Green conveyor belt

Eye fatigue is said to be substantially reduced when a green conveyor belt is used for assembling or inspecting such objects as radio chassis, tubes, small parts assemblies, shells, etc. While the color has no effect on belt performance, the green belt aids in increasing worker efficiency. Abrasion resistant, green inspection belts are available up to 132 in. wide. *Main Belting Co.*

For more data circle No. 29 on postcard, p. 65.



Another good way to put the skids under your handling costs

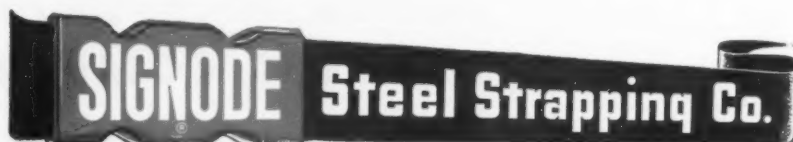
Through the packaging magic of Signode Steel Strapping!

Shown here is a successful adaptation by Signode of a *basic* skid-loading method, made for a shipper of tin plate.

This commodity can easily be a shipper's headache. It is heavy and slippery, and its surfaces are vulnerable — easily dented and scratched.

So Signode engineers wrapped each unit in heavy, moisture-repellent kraft paper, placed metal protectors on the edges, and fastened it to a skid with Signode Steel Strapping. Results? Safer, easier handling at lower cost!

Can Signode help you cut handling and shipping costs through practical adaptations of one or more *basic* skid-loading methods? *It costs you nothing to find out!* Write Signode Steel Strapping Co., 2623 N. Western Ave., Chicago 47, Ill. Offices coast to coast. In Canada: Canadian Steel Strapping Co., Ltd. Foreign subsidiaries and distributors world-wide.



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The **Iron Age**

SALUTES

Hannibal C. Ford

Frequent consultation by top men
is tribute to his ever-active mind.
Inventing is still his hobby.



MAYBE you never heard of Hannibal C. Ford—he's the man whose inventions revolutionized modern warfare and led to design of gunfire computers and modern bombsights.

He's also the man who invented the system of speed control that makes New York's subways the world's safest railroad system. And he's responsible for over 60 typewriter improvements. Get the idea? He's something special.

On the 50th anniversary of his graduation from Cornell the firm he founded (Ford Instrument Co.) established a \$4000 annual fellowship in his name.

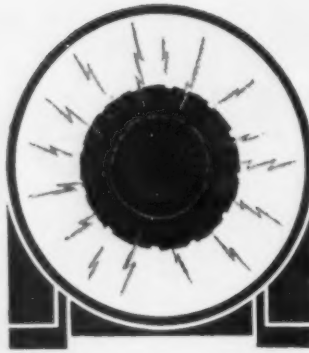
Now in "active" retirement, he is described as the "elder statesman" of the Ford engineering staff. As consultant to the company he comes to the plant a couple of times a week. And Ford's top engineers seek his advice, because most of them worked and learned under him. Much of the "hot" stuff they are working on today is based on his inventions.

Making things is still his hobby. Many of the prototypes of his inventions were made in the extensive machine shop in his basement, where he spends a lot of time.

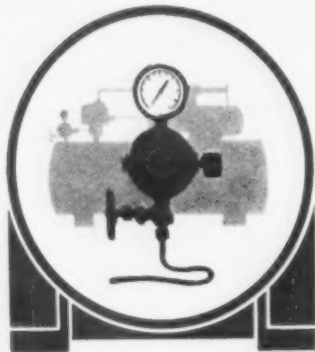
He also has quite a sense of humor: If you happen to be cruising in a boat in the vicinity of Great Neck, L. I., you might see a huge bronze eagle perched on the grassy shore. (It's from the original Grand Central Station). As you draw closer, the eagle will come to life, revolve, and scream. It's all done by pressing a button from a comfortable seat on his veranda.



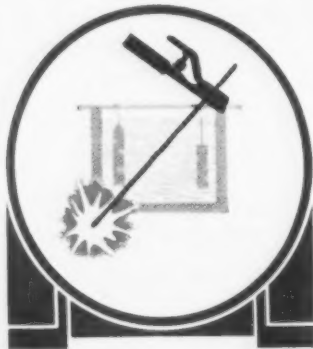
Refrigeration & Air Conditioning



Electrical Generation



Air Compressing



D. C. Generation



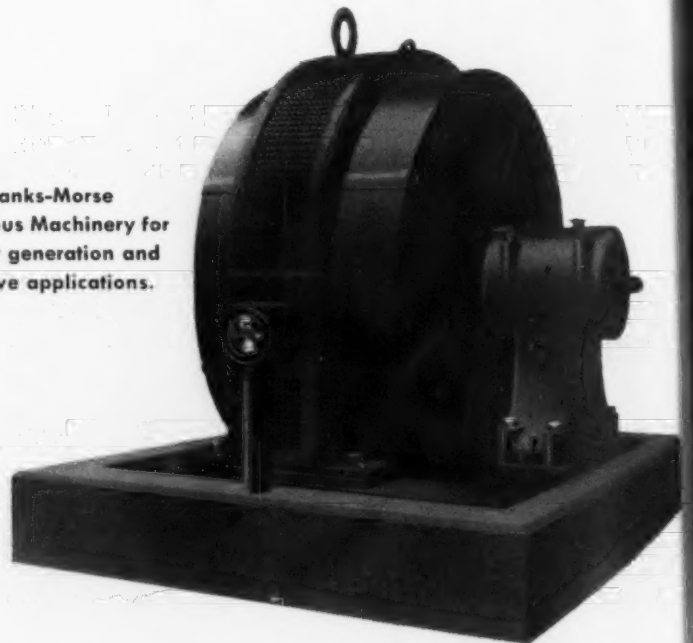
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The **Iron Age**

INTRODUCES

Curtis M. Yohe, elected to the board of directors, MACINTOSH-HEMPHILL CO., Pittsburgh.

James L. Hayes, elected president, NATIONAL ADVERTISING CO., Waukesha, Wis.

Donald R. Ward, appointed assistant to the president, EVANS PRODUCTS CO., Plymouth, Mich.

Charles B. Baker, elected executive vice-president, UNIVERSAL ATLAS CEMENT CO., New York; and Donald C. Leo, appointed general attorney.

George A. Dewey, elected to membership, CONTROLLERS INSTITUTE OF AMERICA, New York.

A. Morton Cooper, appointed manager of application engineering, Gearing Div., WESTINGHOUSE ELECTRIC CORP.; Charles H. Chance, named district manager of industrial relations, Mfg. & Repair Dept.; and George H. McBride, becomes assistant division manager, Switchgear Div.

Arthur H. Costain, appointed plant manager, Newburgh, N. Y., NATIONAL GYPSUM CO.; Eugene M. Baker, manager, Kalamazoo, Mich.

Frank H. Cassell, appointed manager of industrial relations, INLAND STEEL CO., Chicago.

A. P. Emmert, becomes general manager, Detroit Gear Div., BORG-WARNER CORP.; and A. W. Rose, named Pacific Coast representative.

W. W. Kerlin, appointed manager of service engineers, MEEHANITE METAL CORP., New Rochelle, N. Y.

Donald I. Bohn, named head, special electrical development engineering work, ALUMINUM CO. OF AMERICA, Pittsburgh; and Louis N. Grier, becomes chief electrical engineer.

M. D. Archangeli, appointed general sales manager, Valve and Saginaw Divisions, EATON MFG. CO.; J. R. Stearns named sales manager, Valve Div.; and J. R. Harrison, becomes sales manager, Saginaw Div.

Frederick F. Franklin, appointed manager of transportation development, VANADIUM CORP. OF AMERICA, New York.

J. R. Johnstone, named manager, Carbon Products Sales Dept., NATIONAL CARBON CO., New York, a division of Union Carbide & Carbon Corp.; and C. E. Ford, appointed manager, Chemical Carbon Sales Dept.

Gerald F. Propst, made assistant superintendent, industrial relations, Cleveland plant, REPUBLIC STEEL CORP.

Walter F. Coleman, appointed to newly created position of assistant manager, Chicago district, E. I. DU PONT DE NEMOURS & CO.

William J. Borwick, named district manager, Supply Div., Portland, Ore., UNITED STATES STEEL CORP.; Arthur E. Bayley, made treasurer; and George A. Fort, appointed division superintendent, Gary Coke plant.

G. Lynn Coane, appointed sales engineer, Commercial Weldment Dept., BALDWIN-LIMA-HAMILTON CORP., Philadelphia.

J. W. Campbell, named assistant works manager, Buffalo, COLORADO FUEL & IRON CORP.

Alvin E. Hope, named Detroit district sales manager, UNIVERSAL CYCLOPS STEEL CORP.

E. J. Kroka, made director of properties and personnel, S & C ELECTRIC CO., Chicago; A. B. Chilcoat, named director of purchasing and production; and C. C. Martin, becomes manufacturing manager.



ROSCOE A. AMMON, named president and principal stockholder, Marion Electrical Instrument Co., Manchester, N. H.



GEORGE M. THURSBY, appointed vice-president—industrial relations administration, U. S. Steel Corp., Pittsburgh.



NATHAN LOCKSHIN, elected executive vice-president, Builders Structural Steel Corp., Cleveland.

Personnel

Roland C. Thelin, becomes controller, KELITE PRODUCTS, INC., Los Angeles.

A. James Hackl, named manager, Dallas sales office, THE TRANE CO.

A. S. Nippes, appointed works manager, Jeannette Div., ELLIOTT CO., Jeannette, Pa.

Dr. Robert F. Mehl, named dean of graduate studies, CARNEGIE INSTITUTE OF TECHNOLOGY, Pittsburgh.

Forrest R. Old, appointed sales manager, THE PENINSULAR GRINDING WHEEL CO., Detroit.

Joseph D. Doherty, made consulting engineer, ISLAND CREEK COAL SALES CO., Huntington, W. Va.

Thomas S. O'Connor, named sales manager, Chicago office, McLOUTH STEEL CORP.

Robert H. Scott, named sales manager, EVINRUDE MOTORS, Milwaukee.

George V. Emerson, appointed auditor, DRAVO CORP., Pittsburgh; and D. H. Felix, named sales engineer in Chicago.

Howard W. Rush, appointed manager, Washington branch, THE NATIONAL RADIATOR CO.

James B. Qualters, named plant manager, Chicago plant, TOWNSEND CO.; and Herbert E. Fryer, appointed special representative.

Herbert A. Anderson, appointed to newly created post of commercial engineer, DURO-TEST CORP., North Bergen, N. J.

Robert C. Brady, appointed office manager, FARREL-BIRMINGHAM CO., INC., Ansonia, Conn.

E. A. Hakanson, appointed manager, Chicago district, APPLETON ELECTRIC CO.

Dr. Joseph E. Atchinson, named to executive staff, PARSONS & WHITEMORE, INC., New York.



NORMAN E. GUTFELD, elected assistant to the chairman of the board, Builders Structural Steel Corp.



JOHN J. PHILLIPS, appointed general manager, Greencastle, Indiana plant, International Business Machines Corp.



M. J. HOKE, named general manager, Crankshaft & Camshaft Div., Ohio Crankshaft Co., Cleveland.



NICHOLAS D. VUYOSEVICH, appointed manager, Hi-Pac Div., Worcester Pressed Steel Co., Worcester, Mass.

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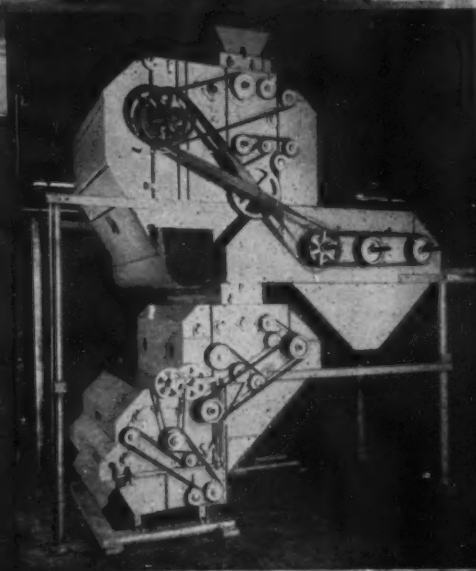
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Personnel

Continued

Abner H. Bagenstose, made eastern regional manager, THE INSULMASTIC CORP. OF AMERICA; and John J. Miller, becomes midwestern manager.

Harry L. Bowman, named dean of faculty and dean of the college of engineering, DREXEL INSTITUTE OF TECHNOLOGY, Philadelphia.

Walter F. Hosek, named head of newly formed Chemicals Div., SULLIVAN VARNISH CO., Chicago.

Charles L. Doerr, named sales manager, east-central region, STULZ-SICKLES CO., Newark.

John C. Walsh, appointed superintendent, HOFFMAN MACHINERY CORP., Syracuse, N. Y.; and Leonard E. Petziner, named sales engineer Cleveland area.

Edward H. Fredrick, appointed assistant general manager, DYNAMATIC CORP., Kenosha, Wis., a subsidiary of Eaton Mfg. Co.

John W. Goodwin, appointed purchasing agent, MAC WHYTE CO., Kenosha, Wis.

D. W. Wilson, named sales representative, TAYLOR CHAIN CO. Hammond, Ind.

Wm. G. Gerstacker, appointed chief engineer, HEIL PROCESS EQUIPMENT CORP., Cleveland.

Donald E. Boose, becomes power transmission sales engineer, Los Angeles office, WHITNEY CHAIN CO.

Dr. Francis Holden, joins chemistry staff, STANFORD RESEARCH INSTITUTE, Stanford, Calif.

OBITUARIES

Albert M. Schweitzer, exclusive sales and engineering representative, Miniature Precision Bearings, Inc., Keene, N. H., recently.

George H. Lange, purchasing agent, Alan Wood Steel Co., Conshohocken, Pa., at Bryn Mawr Hospital, after a three month's illness.

Everybody's job—

Plan Safety for BETTER MORALE, HIGHER PRODUCTION



By W. G. Patton
Asst. Technical Editor

♦ Safety can be built into a plant and its machinery and tools . . . It takes plenty of planning and is everyone's job . . . But Buick, with its ninth safety award in hand, has done an outstanding job in reducing lost time accidents and lowering the accident severity rate.

♦ Freedom from fear of a disabling accident helps cut operator fatigue, actually improves production . . . Many of the safety devices used are relatively low-cost items the average small shop can adapt to its needs.

♦ Many ideas for safety devices were sparked by employee suggestions . . . Safety engineers work with employees to put the new ideas in practice . . . At foremen's meetings, on bulletin boards, and by signs, Buick keeps "Safety" a live subject.

♦ INTEGRATED SAFETY policies that touch every phase of company operation pay high dividends in fewer accidents and less lost time from accidents. They also mean lower accident severity at Buick Motor Div. of General Motors Corp., Flint, Mich. Bonus dividend is higher production in many operations through elimination of the fear of a disabling accident.

Based on improvements in the firm's safety record during 1952, Buick has won for the ninth time the safety award of the National Safety Council. During 1952 Buick employees worked 328,394 hr per lost-time accident. The Buick accident frequency ratio was 1.89. The accident severity rate was 0.43.

Buick's integrated program touches everyone. It starts with safety glasses which are used

throughout the plant. Safety shoes are available to employees at cost. At Foremen's meetings, on bulletin boards, on sign boards, safety and safe working conditions are constantly stressed.

Safety ideas are presented to management through a suggestion plan. Safety engineers are available to any employee who wants to "talk things over." Many of the safety devices used at Buick were developed from employee suggestions.

Where larger machines and equipment are involved, elaborate devices sometimes have to be used. On the whole, however, safety devices are simple, may be built at comparatively low cost, and may be applied in the average metal-working plant.

The accompanying pictures show how Buick

Both safety and production can be improved by combining operations, eliminating handling . . .

manages to keep hands and arms away from the danger during press operations. These devices are all designed around the basic ideas (1) promoting safety and at the same time maintaining production at the existing rate, or (2) improving employee productivity. Through elimination of unnecessary motion, many of these devices actually result in increased output per worker.

Press operators use tongs at every opportunity. Standard purchased tongs and special tongs made from Buick's own patterns are used. Magnesium tongs are light and easy to handle. Many operators learn to operate presses faster with tongs than was possible with unsafe hand loading. Operator fatigue is noticeably reduced by removing the fear element. Die breakage is rare, even when tongs are caught in the press.

Vacuum cups pick up blanks

Tongs won't always work efficiently on small stampings. For light steel blanks with a flat surface, a vacuum cup is mounted on the end of a metal tube. Cups are 2½ to 4 in. in diam. To release the blank into the die, the operator presses a thumb button on the tube.

One press will operate only after a guard door is closed. The operator must remove his hand from the danger zone to close the door. The low-cost device assures practically 100 pct safety on press operations.

Cage guards around small stamping dies are a constant reminder to the operator to keep "Hands Out." The operator can't get his hands through the opening and tongs must be used. The cage guard is tailored to fit the job and stays with the die whether in the press or in storage. These protective cages are inexpensive

and their use avoids many an unfortunate industrial accident.

A metal warning flag is used effectively to eliminate accidents on a welder. Every time the welder makes a downward stroke, the metal warning flag comes down. If it strikes anything—an arm or a pair of tongs—the welder stops automatically. It cannot be started again until the obstacle is removed.

A simple, inexpensive air lift performs a tough industry job that might cause hernia. An engine block is raised about 2 ft from a gravity conveyor to a position where it is easily hooked on an overhead conveyor. A 1-hp motor is used. Meanwhile, the 200-lb block stays level. Handling is simple. There is no swing and safe handling is assured.

Combine operations for safety

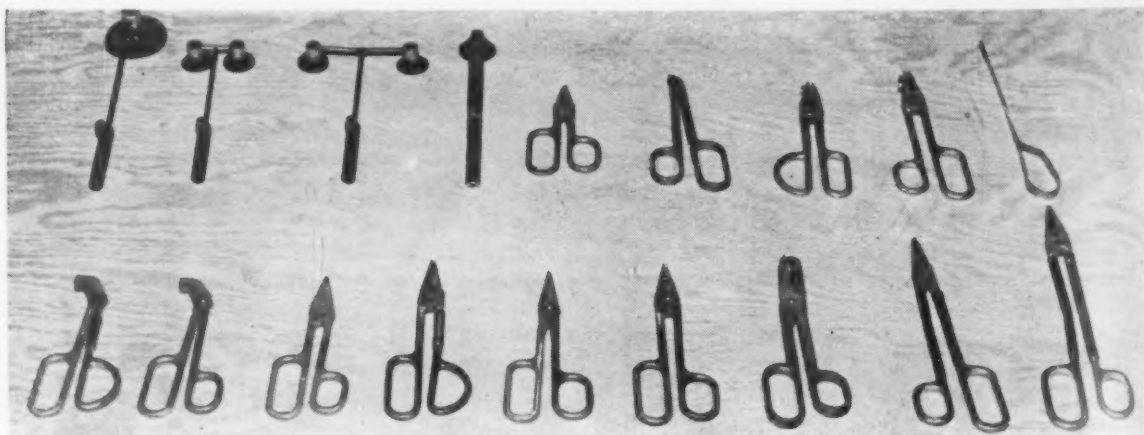
Where one or more operations can be successfully combined and manual handling eliminated, safety of the operation is often improved. In many cases, the production rate can also be increased.

The combined straightening and quenching of rocker arm shafts is an example. Heated steel bar is placed between straightening rolls. As turning continues, a water quench bath rises automatically, submerging the piece and that part of the rolls in contact with the shaft. The quench bath retracts and the piece is removed automatically. Safe, efficient handling is assured with a minimum expenditure of human effort.

Straightening and gaging a twisted or distorted connecting rod can be done rapidly and effortlessly in a properly designed fixture. Again, combining operations cut accidents by eliminating unnecessary handling.

After the part is inserted in the fixture it is stressed in the proper direction with a wrench. Direct-reading gages tell immediately if the desired result has been achieved.

Buick makes its rear axle housing as a 4-piece welded assembly. To eliminate unnecessary human effort in handling these bulky parts, an



TONGS AND GRIPPERS are widely used to feed presses. Many have been specially designed.

Fatigue is reduced and die breakage is rare even when tongs are caught in press.



ON SMALL STEEL STAMPINGS tongs won't always work. Buick uses vacuum cup on end of metal tube to pick up material. Button valve releases blank as it is placed in die.



DOOR MUST CLOSE before this press can be operated. Operator must remove hand from danger zone to close door. Low-cost device assures practically 100 pct safety.



CAGE ON STAMPING DIE constantly reminds operator to keep hands out. Low-cost cage, tailored to fit job, stays with die in press and in storage.



METAL WARNING FLAG comes down every time welder makes a down stroke. If flag strikes anything, welder stops automatically, will not restart until obstacle is removed.

unusual shot peening operation has been devised.

Parts are placed in a blast cabinet. A brief blast of cast steel shot completes the inside cleaning job. To paint the inside of a rear axle housing, two long pieces of tubing with paint

guns attached are inserted in the tube. The two tubes are inserted simultaneously from both ends of the rear axle housing.

When the tubes reach the farthest point of interior travel, red lead spraying begins. Spraying continues as the paint guns are withdrawn.

Housings are rolled into painting position to avoid lifting. Overspray is carried away by blowers.

In forming a fabricated brake drum, the part is inserted and located accurately and safely outside the danger zone of the press. The air-actuated sliding mechanism is timed to pull the previously located part into the die at the proper moment during the press cycle.

Following the forming operation, the part is removed from the die automatically. At no time do the employee's hands enter the danger zone.

Four forming operations in a single press are required to make a torque tube flange. Two operators work safely at this job in which the press operates continuously. The cup for the flange is formed at the first station. The formed part is ejected from the bottom of the die. The operator at this station *slides* the partially-formed part into position in the second die.

Following this draw operation, the part is automatically ejected down a chute to the opposite side of the press. Again the operator slides it (he doesn't place it) into the die. Automatic ejection and sliding into position in the final die is followed by final ejection from the press.

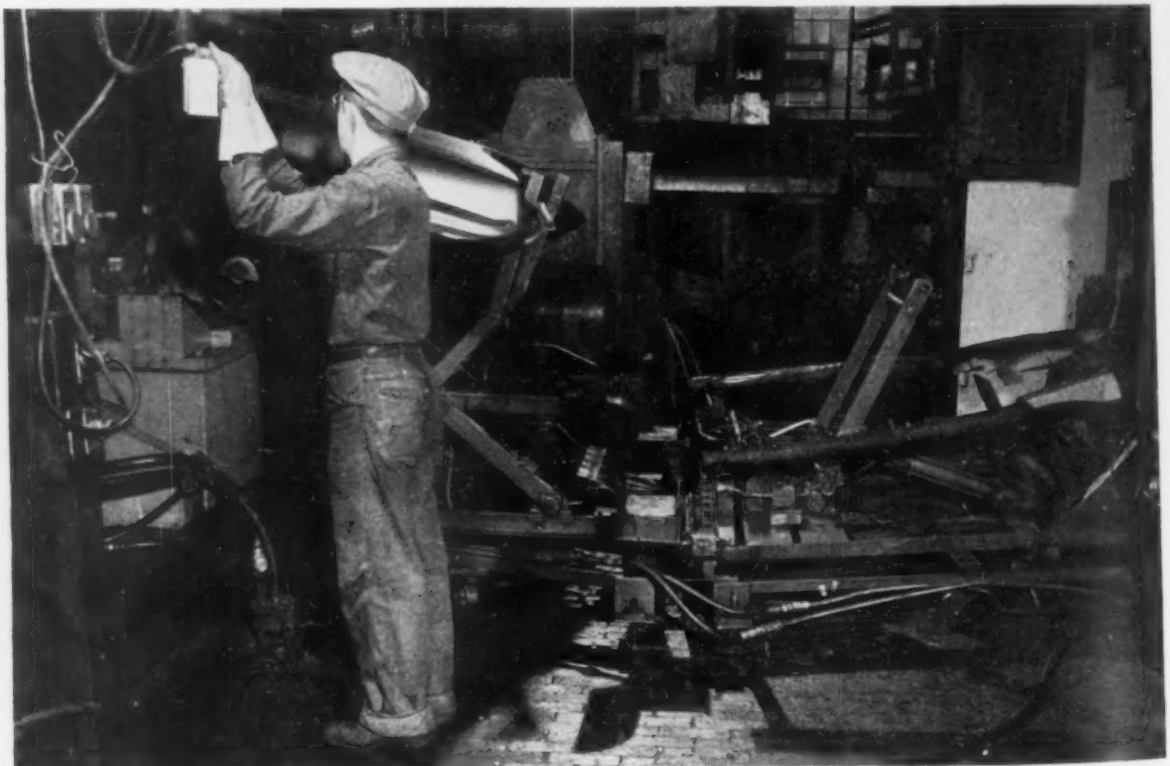
At no time are hands of either operator in the danger zone of the press. The operation is made safe and handling and lifting of parts is reduced to minimum.

A complex, expensive device, designed to permit safe, effortless operation on large presses at speeds near the capacity of big presses is widely

used. The device is used to feed large sheet-metal parts into the press. The partially-completed stamping is inserted in the metal framework and transferred automatically to the

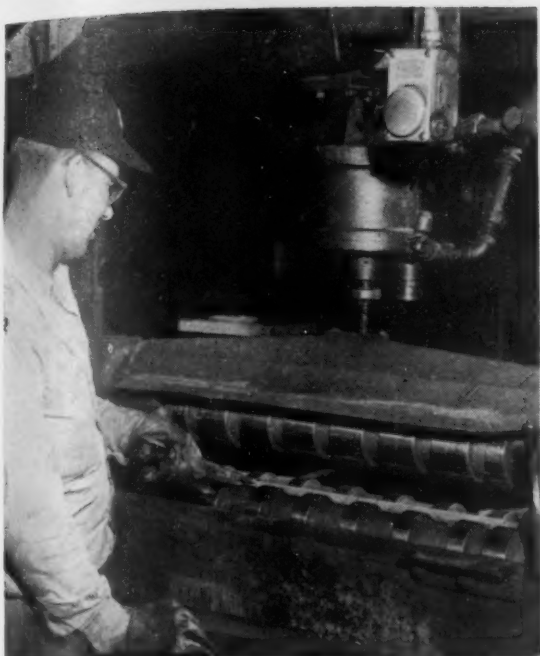


SIMPLE AIR LIFT does a job that might cause a hernia. Engine block, over 200 lb, is raised 2 ft from gravity conveyor to where it is easily hooked on overhead conveyor.



BOTH HANDS ON STARTING BUTTONS are a must. Buttons placed up high prevent operator from leaning against them to start press.

Where two operators work from opposite press sides four high buttons must be pushed to start cycle. Handling equipment, in background.



STRAIGHTENING AND QUENCHING of rocker arm shafts are combined for safer operation. Hot bar is placed between rolls, quench bath rises automatically, submerges part, roll.



EFFORT-SAVING FIXTURE straightens and gages distorted connecting rods rapidly. Combining operations has improved safety by eliminating unnecessary handling.



FORMING OPERATION on this brake drum has been made safer by permitting part to be inserted and located accurately outside of the danger zone of the press.



TWO OPERATORS WORK SAFELY at this press, which operates continuously. Part, a torque tube flange, is ejected automatically, moves on slides to opposite sides of press.

press. Locating positions are built into the die.

Devices like these are particularly useful where a partially-formed part is more or less self-locating. The part is removed from the die mechanically by an Iron Hand, completing a 100 pct safe press operation that was inherently dangerous, monotonous and a high consumer of human energy.

Motor blocks and other heavy parts are usually

turned mechanically or hydraulically. One rollover device designed by Buick engineers for use in the foundry turns a 200-lb motor block 180.°

The block enters the rollover from a gravity roller conveyor. A limit switch actuates the machine as soon as the block is in position. Resting on the pan rail as it enters the turnover, the block is turned end-for-end. The block rests on the cylinders as it leaves the machine.

CABLE LINK CONVEYOR Offers Unusual Flexibility

By W. G. Patton
Asst. Technical Editor

♦ Steep incline in and out of core dipping solution avoids core washing . . . Minimum floor space, reduced tank cost and amount of solution are other advantages.

♦ Positive slip-proof drive on 4-in. I-beam suspension and standard trolley parts make installation costs low . . . No special lubrication is needed and downtime for adjustment is held to a minimum.

♦ **UNUSUAL FLEXIBILITY** is featured in a Cable-Link conveyor system recently installed in Ford Motor Co.'s Dearborn Iron Foundry, Dearborn, Mich. Its flexibility in two planes makes quick dipping of 110 lb of cores possible. The convey was designed and built by Cable-Link Corp., Detroit.

As shown in Fig. 1, the monorail conveyor descends rapidly at an angle of 45° with a vertical radius of 2 ft 6 in. Because of the permissible sharp reverse (up to 90° is possible) cores remain in the solution for a minimum period of time. This avoids undesirable core wash. The load is returned to full conveyor height at a point that measures only 7 ft

1 in. along the monorail. Meanwhile, the batch of cores has been lowered a maximum of 13 in. Maximum load on the Ford Cable-Link conveyor is 400 lb per hook. Ford hooks are spaced at intervals of 4 ft.

Other advantages of the quick dip, in addition to minimum conveyor and floor space requirements, include reduced tank cost and reduced investment in tank solution.

Further evidence of flexibility of the Ford foundry conveyor in both planes is shown in Fig. 2. The 174-ft conveyor is shaped like a double U. Radius of the driving wheels is 2 ft 2¼ in. The Ford Cable-Link conveyor services four core blowing machines and eight rollover machines. The conveyor is a 4-in. monorail. Its construction is standard.

Details of the traction wheel assembly, Fig. 3, show that the brackets holding the cable fit into the notches in the wheel, providing a positive slip-proof drive. A single standard Ford drive is used on the conveyor. The drive spracket is mounted directly on the reducer shaft. Other wheels shown in the diagram, Fig. 2, are idlers and do not supply power to the system. Radius of the idler wheels is 1 ft 2 5/16 in.

Details of the trolley assembly include buttons swaged onto the ends of the 2-ft length of cable. When the two halves of the brackets are brought together, steel nuts are threaded on the tapered sleeve of the bracket, applying pressure over 360°. Serrations inside the bracket provide additional security to the grip. Tests show joints of this type on a 9/16-in. cable have withstood a pull of 11,000 lb.

Weight saving is an important advantage of the Cable-Link system. Weight of the 9/16-in. cable used by Ford is 0.5 lb per ft. Weight of the standard chain construction that could be used in the same installation might be 3 to 4 lb per ft.

Another advantage of the Cable-Link construction is easy storage. Prepared lengths of cable ready for use can be stored in a few feet of storage space. Trolley wheels employed by



FIG. 1—The monorail conveyor using flexible steel cable links between hooks descends rapidly at an angle of 45° . In addition to a quick dip, there is a substantial saving in floor space requirements as well as reduced tank investment.

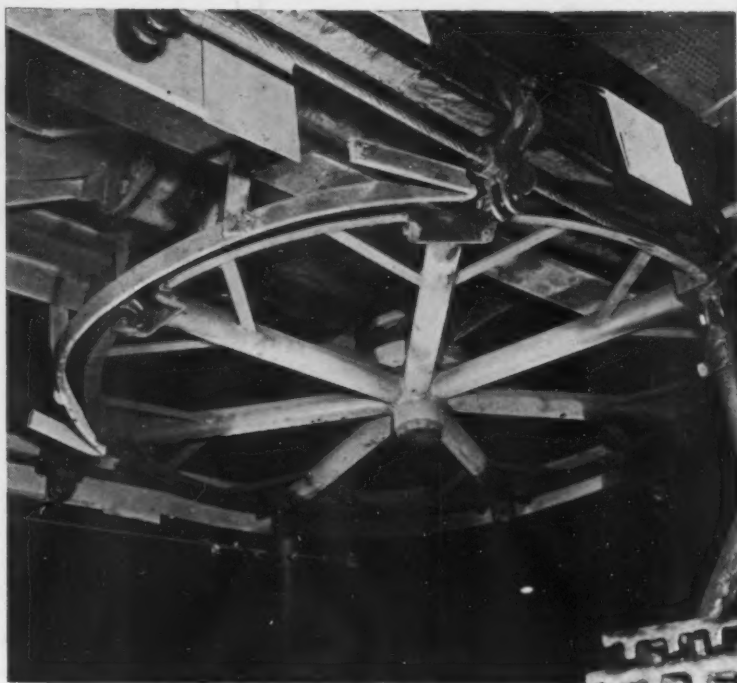


FIG. 3—The brackets holding the cable fit into notches in the driving wheel, providing a positive slip-proof drive. Cable and monorail are at the top foreground. Weight saving is an important advantage of this conveyor system.

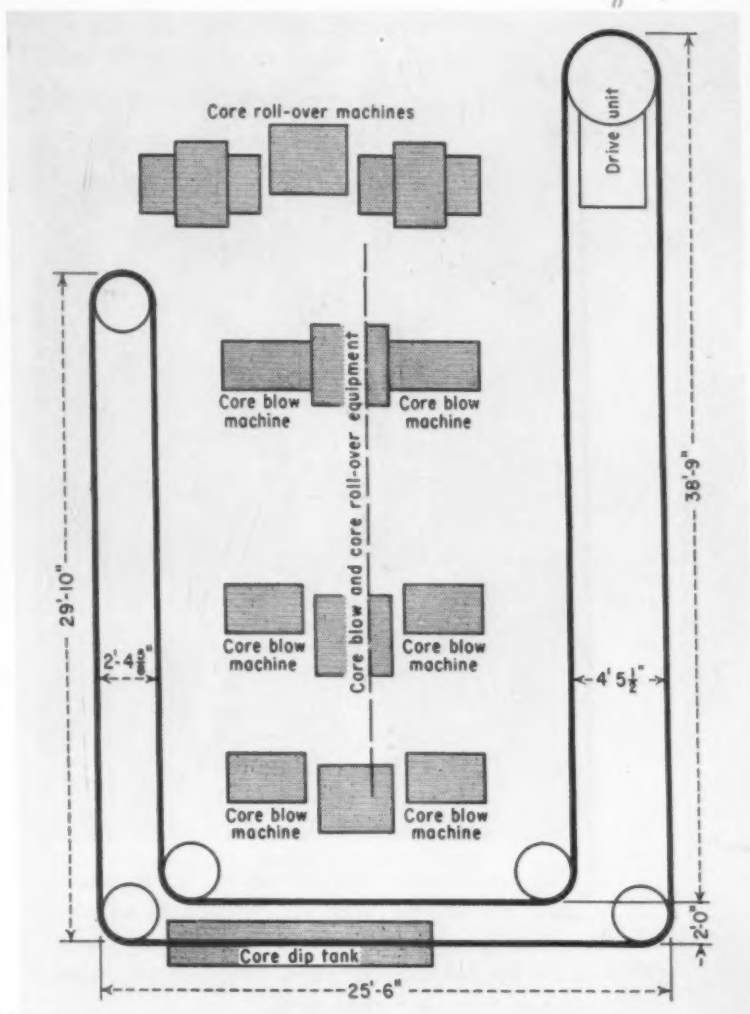
Ford are of standard design and are equipped with bearings that are sealed for life.

During 5 months operating experience, no cable breakage has occurred. Adjustment of the conveyor length can be made simply and quickly with minimum downtime. There has been no indication that special lubrication is necessary, and the Cable-Link conveyor runs without lubrication.

According to the manufacturer, cable is available in 5/16, 7/16 and 9/16-in. diameters. The Cable-Link conveyor has been on the market about 2 years. Maximum length for a conveyor of this type now in service is 2400 ft.

Ford Motor Co. is now installing a Cable-Link system 2500 ft long to handle briquets in the iron foundry. This system has a quick change feature that makes it possible to replace worn trolley wheels without stopping the conveyor.

FIG. 2—The Ford Cable-Link conveyor, right, services four core blowers and eight rollover machines. The conveyor is 4-in. standard monorail. Cable weighs 0.5 lb. per ft.



ALUMINUM COMES OF AGE



By N. F. Ritchey
Atomic Energy Advisor,
Reynolds Metals Co.
Louisville

◆ Light weight, good corrosion resistance, low-neutron absorption rate, efficient heat transfer and ability to bond well with uranium make aluminum a highly acceptable material for nuclear reactors . . . Canning uranium, storing heavy water and making reactor cores are only a few of its many uses.

◆ Its low-neutron absorption rate and rapid rate of radio-active decay permits work to be done on a reactor after only several hours wait . . . Being nonmagnetic and a good electrical conductor made it an essential part of the electrostatic generator at Argonne National Laboratory.



FIG. 1—Uranium fuel elements in aluminum cans are inserted into fuel channels of an air-cooled graphite reactor at Oak Ridge. Cans must be leakproof, corrosion resistant and have low-neutron absorption rate.

◆ MATERIALS FOR REACTORS raised a big problem because precedence for their use was lacking. Aluminum was one of the first acceptable materials. Its lightweight, good corrosion resistance, low-neutron absorption rate, efficient heat transfer and the ability to bond well with

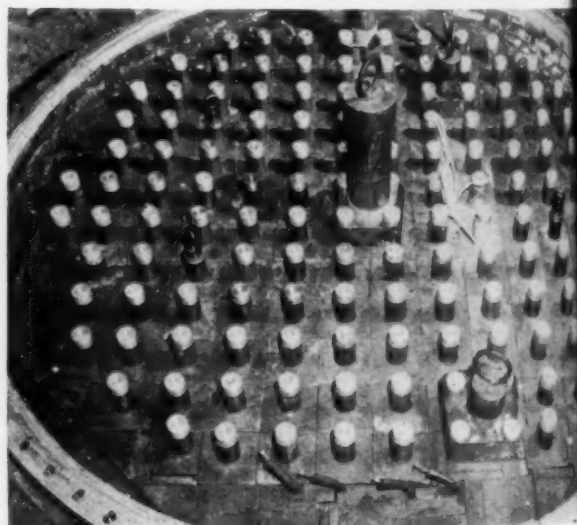


FIG. 2—Ends of aluminum-clad uranium rods protrude from plate which supports them in heavy-water tank of reactor. Opening at center, called the experimental thimble, exposes samples to neutrons.

IN

a Nuclear World

uranium proved to be a unique and highly useful combination of properties.

Fuel for the Hanford reactors are uranium rods carried in graphite piles. Uranium supplies neutrons for the reaction which produces plutonium. In producing neutrons and plutonium, the great quantity of heat from the reaction imposed a major cooling problem.

Water was selected as the coolant. This reduced the problem to one of conveying the fluid to and from regions where heat was generated. Normally, this would not be a complex problem. However, choice of materials for coolant piping, like all other materials used in the pile, was limited by nuclear physics considerations.

Pipe materials had to have a low rate of neutron absorption to maintain a self-sustaining reaction. Most common materials have high-neutron absorbing properties and thus act as poisons in a pile or nuclear reactor. Another requirement for the pipe material was proof against disintegration under the heavy density of neutron and gamma radiation in the pile. The material also had to meet all ordinary requirements of cooling systems. It had to

retain its shape, be leakproof and corrosion resistant.

Graphite pipes were impractical. The choice was therefore narrowed to seven materials which would meet nuclear physics requirements. Lead, bismuth, beryllium, aluminum, magnesium, zinc and tin all have low-neutron absorbing characteristics. Beryllium tubing was unavailable. Of the six remaining metals, only aluminum appeared to be usable from the standpoint of corrosion resistance. Even then there was no assurance that aluminum would be satisfactory until the plant had been operated successfully for a considerable time.

Problem: How to cool uranium

Selection of aluminum for coolant tubes only introduced the next problem—that of cooling uranium. The most efficient method would have been to simply allow water to flow in direct contact with the uranium in which heat was produced. This method was discarded because of the effects of chemical reaction between the uranium and water. One anticipated effect was the introduction of a dangerous amount of radioactive material into solution and a probable reaction which would eventually disintegrate the uranium slugs. Some method had to be found to protect the uranium from direct contact with water.

Two possibilities were considered: One was a coating either by electroplating or dipping; the other was to seal the uranium slug in a protective jacket or can. Strangely enough, canning turned out to be one of the most difficult problems encountered in the piles.

Mechanical jackets or cans of thin aluminum, shown in Fig. 1, were feasible from the nuclear point of view and therefore received preference. The problems of getting a uniform, heat-conducting bond between the uranium and the surrounding aluminum, and that of effecting a gas-tight closure for the can were very troublesome. Even up to a few weeks before the uranium slugs were loaded into the pile, it was not certain that this or any other method under development would be satisfactory. After the first pile had begun experimental operation, a minor but important modification was made. In the following nine months, not a single can



FIG. 3—Aluminum tank which will contain core for homogeneous reactor at North Carolina State College is welded by inert gas-shielded tungsten-arc process. It is due to be in operation this summer.

A heavy water reactor at Argonne National Laboratory consists of a large aluminum tank . . . In this are 120 aluminum-clad uranium rods.

MATERIALS REQUIREMENTS FOR CANNING URANIUM

Must protect uranium from water corrosion.
Prevent fission products from entering water.
Transfer heat efficiently from uranium to water.
Have low neutron absorption rate.
Form easily to shape of fuel.
Bond properly to fuel for good heat transfer.

failed. At the present time, it is the coating most used for solid nuclear fuel.

Two other graphite piles using aluminum-clad fuel elements are located at Brookhaven National Laboratory and Oak Ridge National Laboratory. These two research reactors use air as a coolant instead of water.

Heavy-water reactors are quite small compared to graphite-moderated reactors. This is due to the greater effectiveness of heavy water as a moderator. The Argonne National Laboratory's heavy-water reactor consists of a 6-ft diam aluminum tank which stands 8 ft 10 in. high and holds 6½ tons of heavy water. A total of 120 aluminum-clad uranium rods, 1 in.

in diam and 6 ft long, are suspended in the water. The ends of the rods can be seen protruding from the top of the reactor core in Fig. 2.

Many experimental devices in and surrounding the reactor are also made of aluminum.

Fig. 2 shows the top of the reactor core with the shield removed. Ends of the aluminum-clad uranium rods protrude from the plate which supports them in the heavy-water tank. The larger opening at the center, called the experimental thimble, consists of a 4-in. aluminum tube extending from the center of the top shield, through the tank lid, and down to within 1 ft of the tank bottom. Inside this tube are eight smaller aluminum tubes through which various samples may be lowered into the center of the reactor for exposure to high or low-energy neutrons. By the use of this facility, 32 irradiations may be performed simultaneously.

The Canadian low-power atomic pile at Chalk River is constructed with an aluminum tank which holds heavy water in a manner similar to that of the Argonne reactor. This tank is cylindrical, has a flange at the open top and a convex bottom. Its height is 8 ft 6 in., diameter is 6 ft 9 in. and the wall thickness is ⅜ in. Maximum capacity is about 10 tons of heavy water. The

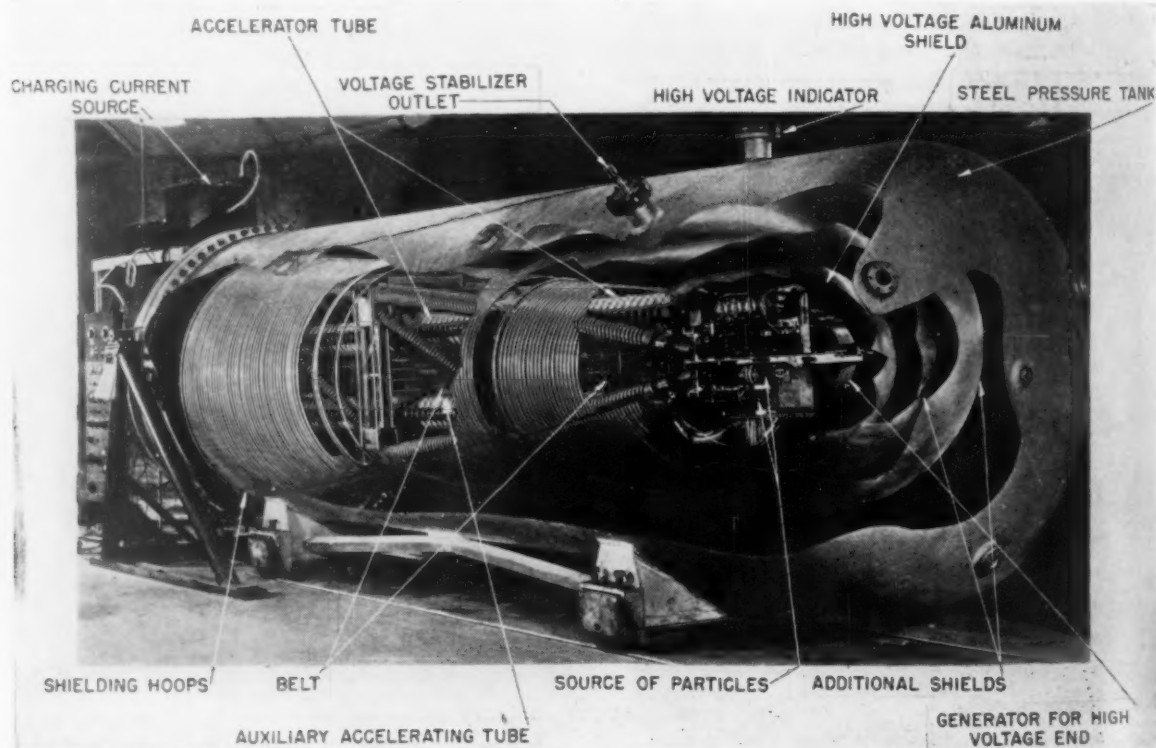


FIG. 4—Aluminum helps accelerate charged ions to velocities of 170,000 miles a sec in new electrostatic generator at Argonne National

Laboratory. Light weight of aluminum sheet and tubing permitted this type of horizontal construction.

Canadian design uses short uranium rods stacked to the desired height in aluminum tubes. The lower ends of the tubes are closed with welded plugs to prevent corrosion of the uranium.

Fuel for the homogeneous reactor is in the form of a uranium salt in water. One principle advantage of the homogeneous system is simple dissipation of heat. The liquid fuel can be recirculated through heat exchangers or cooling coils submerged directly in the reactor core.

North Carolina State College will place a homogeneous reactor in operation this summer. This equipment uses aluminum in several important features. An aluminum envelope, being welded in Fig. 3, surrounds the active stainless steel core containing the uranyl sulfate. The aluminum container has scabbards on its side for the shim control rods, two curved cadmium plates clad with aluminum.

Alloys with uranium

Above the reactor and flange, and bolted to the aluminum can below, is a large aluminum box having a volume of about 40 cu ft. Its purposes are to catch any liquid that inadvertently leaks from the reactor, to retain for leisurely disposal any radioactive gases that may escape from the reactor, and to serve as a safety volume into which the reactor contents can expand without wide liquid or gas dispersal if the reactor system should rupture.

The water boiler reactor at Los Alamos owes its simple, yet versatile controls to the use of aluminum in a direct transmission torque device. Low neutron absorption and rapid radioactive decay of aluminum are other advantages for its use in and around the reactor.

Ability of aluminum to alloy with uranium made possible the construction of one of the most simple research reactors in operation today. Fuel elements in the swimming pool reactor developed at Oak Ridge National Laboratory consist of aluminum-uranium alloy plates clad with aluminum. Five of these plates are spaced $\frac{1}{2}$ in. apart inside a 3-in. square tube. A conical end box, open at the bottom, is welded to the bottom of the square aluminum box.

These fuel-element boxes fit into an aluminum grid containing 54 holes. This entire assembly is mounted on a movable framework which can be lowered into the pool of water. Cooling is effected by natural convection currents causing the water to flow through the open-end fuel elements and between the uranium-aluminum plates.

When fuel elements are removed and the pool drained, the rapid decay rate of radioactive aluminum allows personnel to safely work on the reactor after several hours. Aluminum has a low absorption rate for neutrons; it suffers no damage from radiation and by use of proper

inhibitors in the water, its corrosion resistance is satisfactory.

Another outstanding application is the Van de Graaff or electrostatic generator at the Argonne National Laboratory. Although the conventional design for this generator requires vertical mounting of the tower, there are many advantages in horizontal assembly. To do this, it is necessary to mount the tower at one end as a cantilever beam.

Lightness with strength was an obvious requirement of the construction materials. In addition, the device demanded suitable corrosion resistance to gases and moisture present within the enclosure. It was also necessary that the material be nonmagnetic.

Aluminum was suitable for all these requirements. Fig. 4 shows a compound cutaway of this new generator. The 40-in. diam high-voltage cap and the two high-voltage shields around the cap were formed from aluminum. Also, the electrostatic hoops were made of aluminum tubing.

As charged ions pass each hoop, they receive a kick of several thousand volts. Their speed increases to a velocity of about 170,000 miles per sec at the instant they crash head on into targets at the far end.

Aluminum also plays an important role in Argonne's new 60-in. cyclotron. Coils surrounding each pole of the magnet are hollow aluminum extrusions 3 in. wide x $\frac{1}{2}$ in. thick, weighing 26,000 lb each. These aluminum conductors are cooled by water flowing through a hollow center passage. Other aluminum components are sheathing for the poles, an acceleration chamber and target holding fixtures.

Arms made of aluminum

Master-slave manipulators have been designed and constructed of aluminum. Its light weight, readily available forms and ease of construction make it a completely satisfactory material. This remote-control manipulator, designed by R. C. Goertz, Argonne National Laboratory, is the first of its kind to gain wide acceptance.

A mechanical arm enters a shielded enclosure through a hole in the roof. Mechanical connections between the master handle and the slave tongs are made of aluminum tubing, stainless steel cables, Elgiloy tape and aluminum gears. Counterweights are arranged so that the manipulator is balanced in all positions. Nearly all action rides on ball bearings keeping friction to a minimum.

ACKNOWLEDGMENTS

The author expresses acknowledgment to J. Gammon and B. Brennan, Reynolds Metals Co.; L. C. Furney, Argonne National Laboratory; D. Stearns, Los Alamos Scientific Laboratory; and E. J. Murphy, Oak Ridge National Laboratory for their assistance in preparing this article.

For complex shapes—

NEW PROCESS

Gives Unusual Powder Parts . . .



By H. J. Hamjian
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and



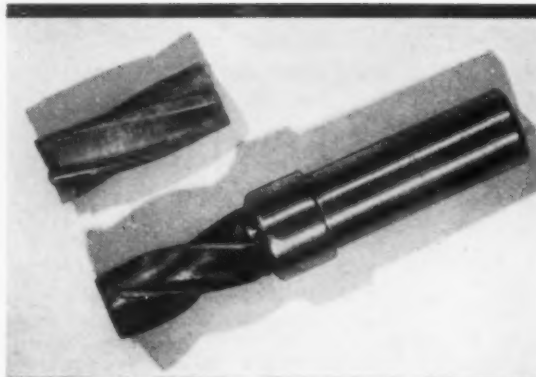
F. N. Darmara
Vice President
Research and Metallurgy
Utica Drop Forge & Tool Corp.
Utica, N. Y.

**New technique
has made these
parts**

♦ Parts with more than usually difficult contours are now being made from carbides and hard-to-melt metals such as titanium and zirconium . . . A new powder metallurgy method developed in Utica Drop Forge & Tool Corp. laboratories is used.

♦ Savings in materials and elimination of most machining are important contributions of the method . . . Only compacting and a single sintering operation are involved . . . Result: Lower powder part costs.

♦ Key problem solved is attainment of uniform density throughout the part . . . Hardness and strength values are consistent, even in undercuts and threads . . . Titanium parts have been pressed and sintered to tolerances of 0.008 in. and other metals have been formed to closer tolerances.



Cemented carbide end mill tips . . .



Titanium chuck wrench . . .

This new process is still in the pilot plant stage. Because of its very nature, it is not intended for simple high production parts. Utica's interest will therefore be confined to complex and hard-to-form parts.

The editors.

◆ **COMPLICATED PARTS**, including twists, undercuts, sharp notches and threads, have been formed directly to shape with a new powder metallurgy process being tried on a pilot production basis at Utica Drop Forge & Tool Corp. of Utica, N. Y. Shapes are more complex than commonly formed in brass or iron powder metallurgy, yet the process forms the pieces in the carbides and hard-to-melt metals such as titanium and zirconium.

Complex shapes have been formed in carbides to final tolerances comparable to those of conventional methods. Titanium parts have been pressed and sintered with a tolerance of 0.008 in. Other metals have been formed to closer tolerances.

In laboratory processing of carbides, the method has produced jet aircraft blades complete with pin tree roots, helical gears with deep and accurately formed teeth, and titanium parts with accurate threads. There was no noticeable parting line, and no machining was needed to obtain the intricate contour. Hollow tubes with internal contour have also been made.

The process represents a logical outgrowth of the processing methods required for the carbides and other refractory metals. Powder metallurgy serves a different function with these materials than with brass or iron. It has become a key step in the basic production process.

In producing many of these metals, the oxide is reduced resulting in a powder. Melting of

such materials is difficult due to the very high melting points or chemical activity of the metal. Titanium, in fact, dissolves all known crucible materials in its molten state. Melting can be done only with such difficulty that costs are very high. However, with powder metallurgy, the melting stage can be bypassed completely—the metal changed directly from powder to the finished piece. This can be done by sintering at temperatures considerably below the melting point of the material.

The Utica process introduces several advantages over conventional cemented carbide and hard metals powder metallurgy. The most advanced standard practice now in use for forming complex shapes starts with very fine milled powder. This powder is compacted to rough size and contour in steel dies in hydraulic or mechanical presses. After pressing, compacts are presintered at temperatures between 1500° and 1800°F. The presintered compacts have a cohesive strength similar to that of chalk which is sufficient for further handling.

Next the pieces are machined to shape but considerably oversize to allow for a 15 to 25 pct shrinkage during sintering. The parts in this chalk-like state can be worked easily with diamond tooling.

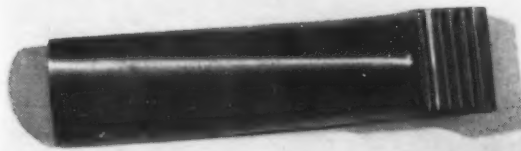
After this rough forming, the parts receive final sintering in electric resistance or induction type furnace, in a vacuum or suitable atmosphere. Then they are machined a second time to final tolerances.

Much of this long and involved process is bypassed by the Utica method which requires only compacting and a single sintering operation. No machining has been necessary on most experimental pieces produced so far. Thus the process brings a sizable saving in both machining time and material. In the field of carbides and titanium, the metal saving is especially important since these materials are expensive.

A basic problem in powder metallurgy, particularly when sizable shapes are pressed, is to obtain uniform hardness in all sections of



aluminum helical gear . . .



This difficult titanium blade . . .

A key problem solved was how to maintain uniform density, even on undercuts and threads . . . Hardness, strength are uniform . . .

the piece. Hardness is dependent upon density. Less dense sections have less hardness and strength. In powder metallurgy you start with a powder and compress it into shape—trying to achieve uniform density throughout the compact. This is very difficult in the conventional powder or "pill" process. Here the die is filled with powder and two punches come together from top and bottom to compact the powder into the form of the die contour. The powder does not flow into the die recesses in the manner of molten metal or plastic. In pressing powder, very high friction forces are set up between the particles, and the powder does not follow the laws of hydrodynamics. Even a simple cylinder will have great density at top and bottom where pressure is concentrated and much less density at the center of the piece.

Part strength consistent

Both the density from top to bottom and the average density of the formed compact will depend on many factors, including the type and fineness of powder used, the amount of pressure and how applied, ratio of diameter to length and the effect of die friction. Increasing the compacting pressure, although very helpful in producing parts of more uniform density along the compression axis—top to bottom—may not be economical for many applications because of the accompanying increases in die wear, tool breakage and press size.

As part complexity increases, even with very intricate die design and multiple punches, the problem of obtaining uniform density becomes still more difficult. Offsets such as screw threads will normally be less dense than the central part of the piece which gets the full

pressure. Thus, portions which should be stronger often may be weaker than the remainder of the piece.

This is one of the key problems solved by the Utica process. Test samples show virtually uniform density, even on portions such as undercuts and threads. Coupled parts have virtually uniform hardness and strength throughout their entire shape.

To date the Utica laboratory has succeeded in pressing to complex shape, carbides including tungsten carbide and titanium carbide and active metals such as titanium and zirconium. The process also lends itself to pressing refractory metals such as tungsten and molybdenum.

Complex shapes of carbides have been produced having final tolerances of 0.014 in. Titanium parts have been produced to tolerances of 0.008 in. The process is new and work is now in progress which may lower these tolerances.

Final surface of the part is dependent upon the fineness of particle size in the powder. Carbides are ground to very small size before compaction, and the surface after sintering is usable for many applications where the required tolerance falls within the limits obtainable. Where closer tolerances are required, parts could be finish ground. The method, however, would save a very large amount of the machining now required to obtain similar shapes and accuracies. More exact cost figures will result from pilot plant operation. The process is expected to bring cost reductions which will make cemented carbides and refractory metals competitive with many special applications of alloy steel parts.



● ● ● A sponge iron hollow cylinder . . .



And a titanium rifle trigger . . .

Salt Bath Heat-Treatment

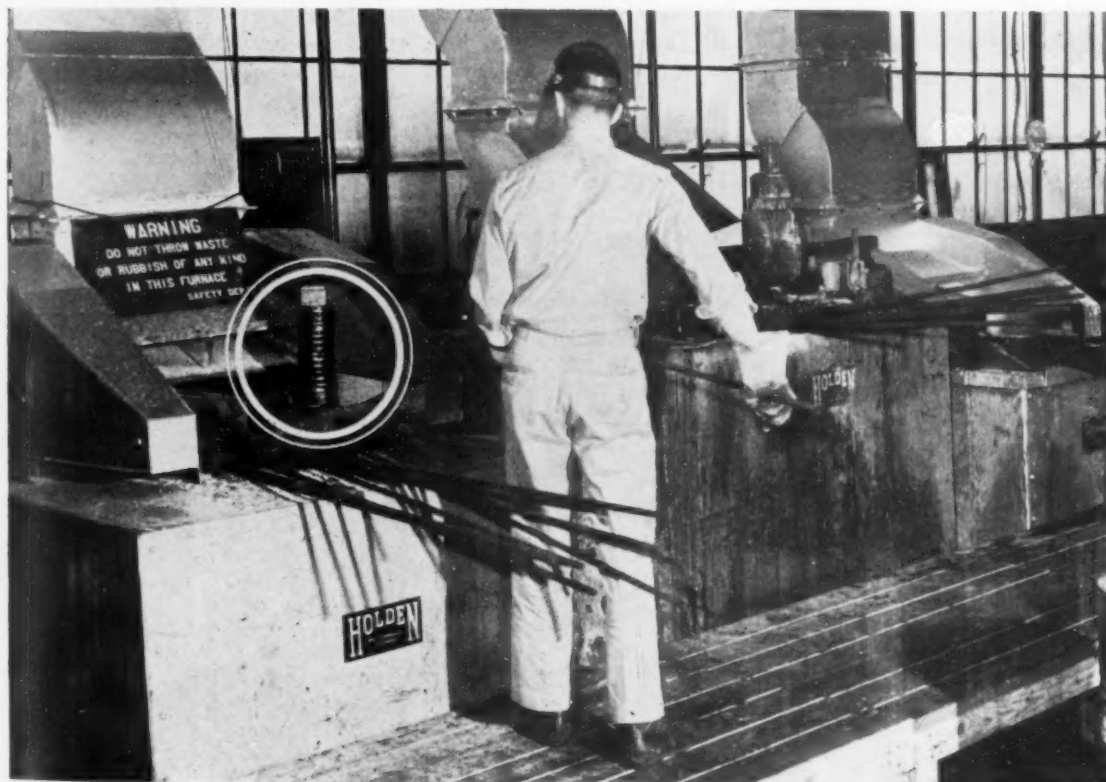
Cuts Distortion

♦ **TORQUE CONVERTERS** for Chrysler and Plymouth cars include a cam ring that is part of an overrunning clutch and is similar in general design to that in other makes of torque converters. In the plant where these rings are made, a Holden salt bath heat treatment has been chosen in preference to other types of heat treating that are employed in some other plants.

Chrysler and Plymouth cam rings are made from SAE 1060 steel and, after machining that includes broaching of the internal cam surfaces and intervening notches, are cleaned and delivered to the setup shown here which includes three Holden furnaces. Ten rings are stacked over the vertical flat strip of each holder which is then picked up on a steel bar run through an eye at the upper end of the strip. Then this load is lowered into the salt bath of the first furnace.

Each load remains in this bath until rings attain a temperature of 1550°F. Then the load is quenched in the salt bath in the second furnace, in which salt is held at 550°F. After this quench, the load is again transferred by hand and hangs in the salt bath in the third furnace where tempering is done at 1020°F. When rings attain this temperature, the load is removed to a cold water quench, after which parts are hot rinsed to remove any remaining salt and to facilitate quick drying.

One man is able to operate this setup, including the loading and unloading of holders, handling about 500 rings an hour. Stacking of the rings helps to minimize distortion and this makes it easy to hold critical dimensions in the grinding that follows heat treatment.



SALT BATH heat-treating setup used in the Chrysler plant to harden torque converter cam rings, circled in photo. A single operator loads

holders and transfers each load through three furnaces, a water quench and a hot rinse in succession.

WELDING SPEED QUADRUPLLED With Semiautomatic Methods

◆ Semiautomatic hidden arc welding methods are combined with welding positioners and turning rolls to step up welding speed and improve quality . . . Most of this shop's work is not adaptable to automatic welding because its welds are relatively short and are not in a regular line or plane . . .

◆ Other results of the changeover from hand welding include less warpage and distortion . . . Better looking welds . . . Improved working conditions.

◆ **WORK POSITIONING** equipment has long been advocated as a means of stepping up welding speed. Worthington Corporation's Plainfield Works, successor to Ransome Machinery Co., is now finding ways to extend the economies of its product even further with the semi-automatic welding method. The company is practicing what it is preaching right

in its own weld fabricating shop in the manufacture of its work positioners.

The company is in the midst of an aggressive changeover program to convert many hand welding operations over to the flexible, high speed semiautomatic welding process. In conjunction with the automatic and semiautomatic methods, welding positioners and turning rolls

FIG. 1—Fabricating work positioner table with semi-automatic hidden arc process.

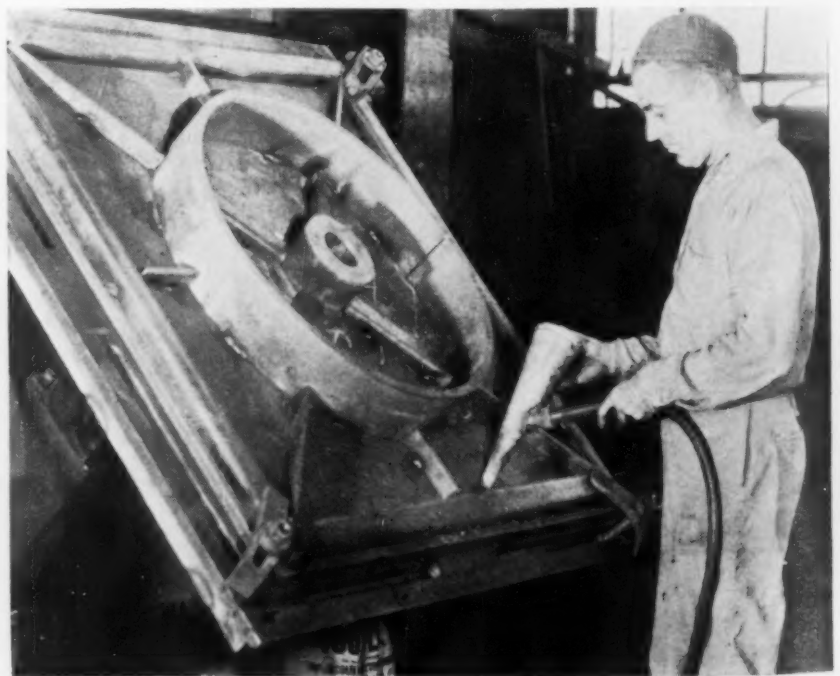


FIG. 2—Fabricating 51 1/4 in. diam gear blank with semi-automatic welder.



are used to develop highest possible production.

On an average welding, speeds are climbing from 7 ipm for 1/4-in. fillets by hand up to about 28 ipm with the semiautomatic hidden arc process. Warpage and distortion problems are minimized. Weld appearance is better. Working conditions are improved.

The nature of the majority of its work pre-

cludes the application of fully automatic welding. The welds are relatively short or are not in a regular line or plane. One exception is a gear blank and this part is being welded with fully automatic equipment unless there is too much volume of work, in which case a semi-automatic welder helps out. With the fully automatic equipment, welding speed for 1/4 in.



FIG. 3—Fabricating frame for work positioner with Manual Lincolnweld.

There's less distortion with this semiautomatic welding than with hand welding . . . Small parts with irregular contours can be welded.

fillet is 80 ipm. To weld at these high speeds the equipment must be mounted on a positive drive unit where speed and voltage conditions are maintained constant.

In Fig. 1 a Manual Lincolnweld semiautomatic unit is being used to fabricate the table for a No. 60 Worthington positioner. This part is 46-in. square. The plate is 1-in. mild steel, ribbed with 2 x 1/2 in. and 4 x 1/2 in. bar and channels formed from 3/16-in. plate. The hub is hot-rolled bar. The center ring is rolled from 6 x 3/4-in. stock.

The component parts for the table top are assembled by hand tack welding in a fixture. The tack welded assembly is then clamped in place on the work positioner and in clamping down is given a precamber to correct for distortion in finish welding. The distortion with the high-speed semiautomatic process is only 1/8 in. Formerly with hand welding it amounted to 1/2 to 5/8 in. To obtain control of distortion it was necessary to make full use of both positioners and welding sequence.

In welding the outer welds are made first then inward toward the hub. The outer welds are 6 to 10 in. long. Those welds attaching the center ring and ribs to the plate are continuous 1/4-in. fillets.

Another part, the gear blank, is welded by a full-automatic welder or by a semiautomatic unit when the former is busy. It is shown in Fig. 2 being welded with the semiautomatic equipment. This gear is 51 1/4 in. O.D. with a rim 2 1/2 in. thick. Web plate is 1/2 in. thick, and it is in two semicircular sections. Stiffening plates are 1/4 in. thick.

After tack welded assembly the gear blank is mounted on the work positioner, and the rim and plate are welded with a continuous 1/2-in. fillet on both sides. Triangular stiffener plates are also welded to rim and web plate with the semiautomatic equipment.

Application of the semiautomatic welding process to the frame of the positioner is illustrated in Fig. 3. The component parts cut and formed from 3/8-in. plate are first tack welded together. The assembly is then placed on the work positioner where it can be rotated for flat downhand welding. These welds are 3/8 in. fillets.

Weld penetration is deep

This plant has five semiautomatic welders and one fully automatic machine. All welders are able to use the semiautomatic equipment and like its operation to break the monotony of hand welding.

To facilitate the loading of the welding gun with flux the shop has devised a flux dispenser as shown in Fig. 4. The hopper is rolled and welded from 16-gage steel and is mounted in a frame of 1 1/2 x 1 1/2 x 3/16-in. angles with casters. A swinging gate releases the flux into the gun as shown.

The popularity of the new method with the shop is illustrated by the way it has applied the process to the fabrication of its machine tool fixtures. These relatively small parts involve short welds of irregular contours, yet the tool builders prefer the semiautomatic welder because its high speed and deep penetration help maintain close tolerances. The two fixtures shown in Fig. 5 are typical.



FIG. 4—Flux dispenser fabricated in the welding shop is used to simplify filling of welding gun with flux.



FIG. 5—Typical machine tool fixtures fabricated by the shop with the semi-automatic welder made to close tolerances.

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HEAT TREATING:

**Modernization and expansion of im-
plant facilities builds savings.**

Dissatisfaction with its own heat treating facilities and with sub-contracted heat treating work recently caused the Harris Div., Harris-Seybold Co., Cleveland, to expand and modernize its heat treating facilities. Over \$3,000 per year was saved, enough to amortize the equipment investment in five years.

The heat treat department originally consisted of seven oil-fired, manually controlled furnaces capable of handling only 60 pct of required production. The remaining volume—about 10,000 lb of alloy steel parts—had to be treated on the outside.

High Scrap A Problem

A serious production problem, resulting from this situation, soon led to the consideration of in-plant heat treating of all required work. Sub-contracted work had been averaging an exceedingly high scrap cost of about \$3.46 per 100 lb of work treated.

Cost and production figures on the work processed in its own plant, with what was actually obsolescent equipment, showed a scrap cost of only \$0.37 per 100 lb of work treated. In addition, a substantial number of parts were being replaced in the field for reasons definitely attributed to improper heat treatment.

Affected Production Schedules

This high scrap rate, although not significant from the point of total cost, had its effect on production and shipping schedules. Also every time a defective part



PARTS REQUIRING heat treatment covered a wide range of sizes and materials. Parts are used on Harris-Seybold printing presses.

IF YOU WANT MORE DATA

You may secure additional information on any item briefed in this section by using the reply card on page 65. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

was replaced in the field due to faulty heat treatment, the markets for potential new and repeat business were jeopardized.

Primary consideration in the solution of this problem was, of course, given to the types of heat treat equipment available on the market. Manufacture of the highly intricate precision printing presses produced in the Cleveland plant required job lot production that was not sufficient for continuous heat treat equipment. The natural choice thus involved the batch-type or intermittent production equipment.

Heat Treating Requirements

The required heat treat production included the carburizing, hardening, cyaniding, normalizing, drawing, and bend forming of over 1,000 different parts, ranging in size from a 1/8-in. pin to a 9-in. diameter forging.

Practically all of these parts were relatively small parts with a few large gears requiring hardening and annealing to be treated on the outside as was previous practice. Required temperatures were of such a wide range, 700°-2000°F as to also become a prime factor.

It was apparent that maximum economical production with minimum initial investment could be possible only by keeping number and size of furnaces to a minimum. Highly flexible equipment was thus indicated.

Several Methods Considered

The possibility of gas carburizing and dry cyaniding was also considered and rejected on the



LARGE OVEN FURNACE with Conjecto-firing system for wide temperature range operations. Standard practice is to carry out several operations simultaneously in this direct-fired furnace.

basis of required production volume. The cost of one furnace of this type was found to be approximately equal to the full amount authorized for our entire equipment program.

As a further consideration, the large number of parts requiring selective hardening and cyaniding indicated special plating facilities as additional equipment or, as seemed a logical alternative choice, salt bath furnaces instead of atmosphere equipment.

The exclusive use of salt bath equipment was next investigated and considered not feasible because of the shrink fitting required for certain parts. Any salt left between these mating parts, even after cleaning, would, of course, result in corrosion which could not be permitted.

Equipment Flexibility

Standard rated furnace equipment built by Surface Combustion Corp., Toledo, was selected. Two pot type furnaces of 16x24 in. size are used for salt bath cyaniding and neutral hardening. Flexibility is provided by switching pots as production conditions require.

A large oven furnace with 30x60 in. hearth is used for pack carburizing, hardening, annealing, normalizing, bending, and shrinking operations through a temperature range from 600° to 2000° F.

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STAINLESS SIZES: 3/8" O.D. to 3" O.D. .028 to .095 wall

Are you assembling 1953 models with Socket Set Screws of 1930 design ?

1930



Take a look at the Socket Set Screws in many 1953 models of machine tools, plant apparatus, appliances, etc., and you'll find they are no different from those used in 1930 or before.

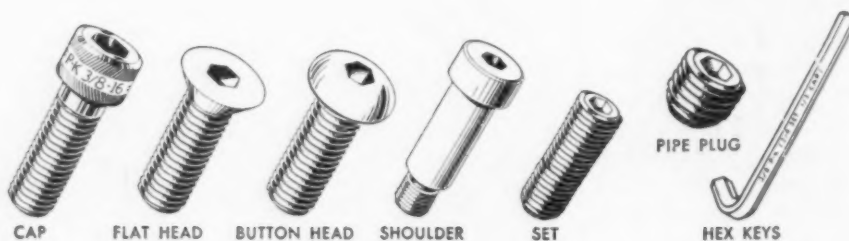
If you think there has been no change in such fasteners since 1930, you haven't seen Parker-Kalon *Ground Thread* Socket Set Screws.

Their clean, smooth, shining threads assure easy keying, and faster assembly. But equally important is the design prestige P-K *Ground Thread* Socket Set Screws give any product. Any buyer associates modern engineering and top-most quality with a gleaming thread finish he has seen before only on costly set screws of instrument precision.

Compare them with any cut-thread socket set screws and you'll see the day-and-night difference. Then specify "P-K *Ground Thread*" on your next order. Put your product out in front, assembly-wise and sales-wise.

For SAMPLES, ask your P-K Distributor, or write: Parker-Kalon Corporation, 200 Varick St., New York 14.

Good judgment calls for



Healthy Steel Market May Fool Experts—Again

Nothing in sight to indicate more than moderate decline . . . Carryovers bigger than expected . . . Some consumers disappointed by quotas smaller than they had hoped for.

Steel business is so good it threatens to embarrass the experts again. There is nothing in sight—not even the Korean Truce—to indicate anything worse than a moderate decline before the end of the year. But even a moderate decline is not a certainty.

A careful check by THE IRON AGE this week indicates that carryovers from third to fourth quarter will be much larger than had been expected. Carryovers are orders which could not be delivered at the specified time. They usually result from over-booking or from production difficulties. Since the industry is still producing at a good clip, it appears that over-booking is largely to blame for delay in filling orders.

Still Use Quotas . . . Some steel consumers are frankly annoyed by persistent reports that the steel market is beginning to decline, or is due to decline shortly. Manufacturers who are unable to place orders for all the tonnage desired are disappointed by fourth quarter "quotas" smaller than they had expected. Although the bulk of steel production is free from controls, producers are still using a voluntary quota system of distributing steel to their customers. Large carryovers are holding quotas in check.

Fourth quarter steel set-asides for direct defense and military programs are reduced sharply from previous levels. Set-asides for fourth quarter total 1,837,000 tons compared to 2,279,000 tons in the third quarter. This is a decline of about 450,000 tons.

Letting Go Controls . . . Office of Defense Mobilization doesn't in-

dicate any cutback in military use or needs; instead it means a "letting go" of controls.

Many contractors and subcontractors are able to place orders in a free market instead of having to go through red tape of applying to ODM for priority.

Defense Inventories Good . . . Manufacturers of defense goods have not been picking up all the steel set-aside for their use. Steel inventories in defense plants are generally at least adequate. Some instances of very large inventory accumulation have been noted.

When steel supply finally does catch up with demand, the market will be extremely competitive. Most expansion and modernization programs have been carried out with lowering of competitive costs in mind.

Sheets Still Tight . . . Rapid amortization will also be a potent factor in steel competition. Steel companies will have to keep operating at reasonably high rates to take advantage of 5-year tax write-offs. Otherwise there would be no advantage to the rapid amortization feature of their expansion. If necessary some steel companies will absorb freight to keep their expanded capacity operating.

Products in tightest supply this week are hot and cold-rolled sheets, large sized bars, light plates, oil country goods, and some structural items. Of these products, sheets account for the biggest tonnage. Additional capacity is being brought into production this week and still more is in sight. Steel's biggest customer, which also consumes the most sheets, is the auto industry.

Cancel Conversion . . . A check of auto producers finds the major ones still pushing production to the hilt. Reports of sales trouble do not apply to the bigger producers. They are still using conversion steel and will continue to do so for some time.

Chrysler may become the first of the Big Three to get out from under conversion costs. The firm has cancelled all conversion that has not yet reached the melting stage, or could not be delivered before the fourth quarter. The company is confident that regular mill sources will be able to fill its requirements after September.

Ford has placed some conversion orders for early fourth quarter. But expects to wind up its procurement of premium priced steel shortly thereafter. General Motors is in about the same situation.

Body Steel Easy . . . Auto body builders, with their own orders shaved by automotive stretchouts, are filling their steel requirements with little trouble. There has been some rescheduling of tonnages to stamping plants supplying the auto industry. Some auto stampers have been affected by stretchouts, down time for inventories, or upcoming model changeovers.

Warehouse sales are picking up after a moderate summer slump, following settlement of the wage question. But distributors who bought premium priced material are having a hard time disposing of it.

Steelmaking operations this week are scheduled at 97.0 pct of rated capacity, up 1½ points from last week's revised rate.

After weeks of steady advance, scrap prices edged up again this week. THE IRON AGE Steel Scrap Composite Price rose 9¢ a ton to \$44.92 per gross ton. Inventories are large.



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metallurgists direct from the Reading Mill.

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Market Briefs and Bulletins

Get \$4 Million Motor Order . . . Westinghouse Electric Corp. has received orders totaling \$4,053,000 for more than 1000 large electric motors to be used in Atomic Energy Commission projects. Motors will range in size from 350 to 950 hp. About 600 of the units will be made at Westinghouse's East Pittsburgh Works with rest being built at the company's Buffalo plant.

Consumer Prices Up Slightly . . . Consumers' prices rose 0.7 pct from May to June, according to a 10-city study completed by National Industrial Conference Board. Purchasing value of the dollar was rated at 55.6¢ for the month, a slight drop from the 55.9¢-level of June, 1952.

Export More Steel . . . Total exports of steel products from the U. S. last year were 4.16 million net tons, a gain of 882,000 tons or 27 pct over the previous year, according to Dept. of Commerce figures. Despite the increase, however, exports last year were still 47.5 pct below the record high of 7.9 million tons exported in 1940.

Canada Eases Controls . . . Canada's Defense Production Dept. has relaxed distribution controls over primary nickel, electrical resistance alloys and nickel anodes. Under the new ruling it is no longer necessary for purchasers of these materials to submit their orders for Defense Dept. approval.

Increase on Aluminum Foil . . . Kaiser Aluminum & Chemical Sales, Inc., has raised base prices of aluminum foil \$1.5¢ to 2¢ per lb. The change was effective July 23.

Extend Procurement . . . Continuation of the government purchase program to encourage domestic production of seven strategic materials seemed assured this week when Congress completed and sent to the White House a measure extending the procurement authority through June 30, 1958. Materials which will be bought generally at higher than world market prices for the 5-year period are tungsten, manganese, chromite, mica, asbestos, beryl, and columbium-tantalum bearing ores and concentrates.

Walkout Causes Shutdown . . . Woodward Iron Co.'s plant at Birmingham was forced to close down for 4 days last week when 150 transportation employees walked out because of a company change in supervisory staff. Walkout affected the railroad serving mines, coke plants and blast furnace operations and resulted in a closedown of the plant. Full operations resumed Monday.

Triple Capacity . . . Brainard Steel Div. of Sharon Steel Corp. has awarded contracts for construction of a new steel strapping plant which will triple the company's capacity for steel strapping and other items. It is expected that the new plant will be in production by February.

Set Ferroalloy Record . . . Blast furnace production of pig iron and ferroalloys during the first 6 months of this year totaled a record 38,313,549 net tons. This was 2 million tons more than was produced in the last half of 1951, the previous record period, American Iron & Steel Institute reports. In June, blast furnace production was 6,372,531 tons, a new 30-day month record.

STEEL OPERATIONS

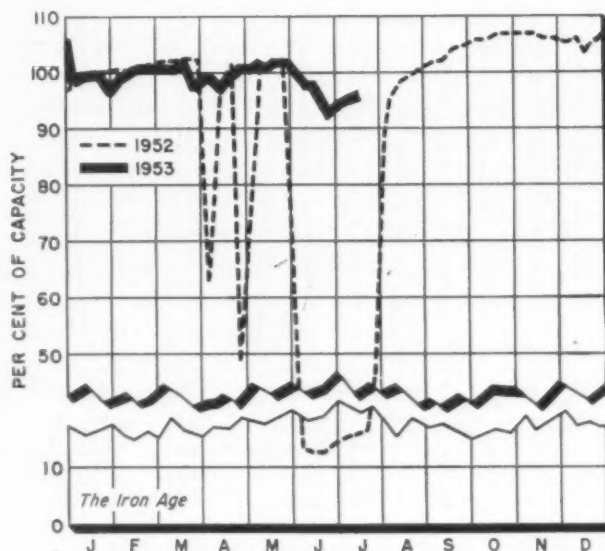


District Operating Rates

District	Week of July 26	Week of July 19
Pittsburgh	98.0	95.0*
Chicago	93.5	98.0
Philadelphia	98.0	98.0
Valley	98.0	96.0*
West	104.0	100.5*
Cleveland	97.0	92.0*
Buffalo	106.5	106.5
Detroit	103.0	107.0*
Birmingham (South)	98.5	102.5
Wheeling	100.0	100.0
South Ohio River	92.0	92.0
St. Louis	93.0	85.5
East	103.0	57.0
AGGREGATE	97.0	95.5*

Beginning Jan. 1, 1953, operations are based on annual capacity of 117,522,470 net tons.

* Revised



Government Tackles Alcoa-Alcan Again

U. S. would kill deal in which Alcan would supply Alcoa with 600,000 tons of aluminum by 1958 . . . Alcoa feels it's legal . . . Reynolds boosts prices—By R. L. Hatschek.

Once again Aluminum Co. of America and Aluminium Ltd. are having a go-round with the U. S. Government. This time the Attorney General's office takes exception to the recently announced deal whereby Aluminum Co. of Canada, an Aluminium Ltd. subsidiary, was to supply Alcoa with 600,000 tons of metal over a 6-year period ending in 1958.

Attitude of the government lawyers is that the Alcoa-Alcan would at least tend to stifle competition in the U. S. Settlement of the 1951 court case was based on the assumption that if common ownership of Alcoa and Aluminium Ltd. stock was eliminated the Canadian supplier would become a real competitor in the U. S. market.

Just Optimistic . . . Alcoa hadn't made any official statement up to press time since the firm wanted to have its lawyers read over the government charges. Feeling is that the agreement is legal and made in good faith.

Alcoa has extreme confidence in markets for the light metal. That was well demonstrated when the firm announced its proposal to build a huge smelting plant in Alaska. Since that is being delayed while the Canadian Government surveys the possibilities of

developing the power site for Canadian use, Alcoa felt it advisable to assure itself of a greater supply by the long-term agreement with Alcan.

And Alcan, of course, was looking for outlets for the metal which will soon start coming from its huge Kitimat reduction facilities. The Canadian firm made offers to all U. S. producers and independent fabricators.

Reynolds Hikes Prices . . . Wage discussions had progressed far enough last week to indicate approximately how high costs would be increased. This permitted Reynolds Metals Co. to establish some new base prices.

Pig and ingot aluminum, in standard grades, are $\frac{1}{2}\epsilon$ and 1ϵ per lb higher, respectively. This is retroactive to July 20. New prices for mill products will be set after wage negotiations have been concluded and these will be effective as of July 23.

Keep Mum . . . As in negotiations recently finished by Aluminum Co. of America and Kaiser Aluminum & Chemical Corp., the secrets of the discussions have been extremely well kept. Reynolds, having more southern plants than the other two aluminum pro-

ducers, is in a bit rougher spot in light of the general elimination of the North-South pay differential.

It still has not been learned whether or not workers at Reynolds' Louisville and Lister Hill plants received any added boost because of their locations. General settlement was $8\frac{1}{2}\epsilon$ per hour.

Still Talking . . . Since discussions are still in progress with other unions, nobody will let the cat out as yet. The basic wage increase has been settled. Though nobody's saying how much, it's most probable that the raise comes to $8\frac{1}{2}\epsilon$ per hour. Talk right now is centered on a number of secondary points and the southern differential may well be high on that list.

Sell to Reds? . . . The Chilean government last week indicated its willingness to sell copper on the other side of the Iron Curtain—if the Communists would pay the Chilean price in dollars. At present the South American supplier is meeting extreme difficulty in finding an outlet.

Their price is still 35.50¢ per lb at Chilean ports as compared to the world market price of about 30¢ per lb. It's been freely predicted that the Chileans would soon have to face facts and cut their price. Under the present setup, producers get 24.50¢ for their copper and the rest goes into the government till.

May Cut Tin Output . . . While tin prices continue to sag in all trading centers the Malayan Chinese Miners Assn. is reported studying a plan to trim output. Reason would be to bolster prices. World production of tin has been consistently higher than total demand for several years and many Chinese mines are marginal.

In the past three months some 54 of these mines have been closed, it's reported. Under the proposed plan, each mine would be given a production quota.

NONFERROUS METAL PRICES

(Cents per lb except as noted)

	July 22	July 23	July 24	July 25	July 27	July 28
Copper, electro, Conn.	29.75-	29.75-	29.75-	29.75-	29.75-	29.75-
	30.00	30.00	30.00	30.00	30.00	30.00
Copper, Lake, delivered	30.125	30.125	30.125	30.125	30.125	30.125
Tin, Straits, New York	78.75	79.75	80.25	.....	80.25	80.25*
Zinc, East St. Louis	11.00	11.00	11.00	11.00	11.00	11.00
Lead, St. Louis	13.55	13.80	13.80	13.80	13.80	13.80

Note: Quotations are going prices.

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higher
temperatures
give rise
to metal
problems...



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Nonferrous Prices

(Effective July 28, 1953)

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Sheet: 0.136-in. and thicker, 2S, 3S, 33.9¢; 4S, 36.0¢; 52S, 38.2¢; 24S-O, 24S-OAL, 37.0¢; 75S-O, 75S-OAL, 44.7¢. 0.081-in. 2S, 3S, 35.1¢; 4S, 37.7¢; 52S, 39.9¢; 24S-O, 24S-OAL, 38.4¢; 75S-O, 75S-OAL, 46.9¢. 0.032-in. 2S, 3S, 37.0¢; 4S, 41.8¢; 24S-O, 24S-OAL, 46.9¢; 75S-O, 75S-OAL, 58.4¢.

Plate, 1/4-in. and heavier: 2S-F, 3S-F, 32.4¢; 4S-F, 34.6¢; 52S-F, 36.2¢; 61S-O, 35.6¢; 24S-O, 24S-OAL, 36.9¢; 75S-O, 75S-OAL, 44.3¢.

Extruded Solid Shapes: Shape factors 1 to 5, 37.4¢ to 82.8¢; 12 to 14, 38.2¢ to 99.0¢; 24 to 26, 40.9¢ to \$1.29; 36 to 38, 48.4¢ to \$1.89.

Rod, Rolled: 1.064 to 4.5-in., 2S-F, 3S-F, 42.8¢ to 37.2¢; cold-finished, 0.375 to 3.499-in., 2S-F, 3S-F, 47.6¢ to 39.3¢.

Screw Machine Stock: Rounds, 11S-T3, 1/4 to 11/32-in. 59.6¢ to 47.0¢; 3/4 to 1 1/2-in., 46.6¢ to 45.8¢; 1 9/16 to 3-in., 42.7¢ to 39.9¢. Base 5000 lb.

Drawn Wire: Coiled 0.051 to 0.374-in., 2S, 44.1¢ to 32.4¢; 52S, 53.4¢ to 39.1¢; 17S-T4, 60.1¢ to 41.8¢; 61S-T4, 53.9¢ to 41.3¢.

Extruded Tubing: Rounds, 63S-T6, OD 1 1/4 to 2 in., 41.6¢ to 60.7¢; 2 to 4 in., 37.7¢ to 51.1¢; 4 to 6 in., 38.2¢ to 46.6¢; 6 to 9 in., 38.7¢ to 48.8¢.

Roofing Sheet: Flat, per sheet, 0.032-in., 42% x 60 in., \$2.888; x 96 in., \$4.543; x 120 in., \$6.680; x 144 in., \$6.816. Coiled sheet, per lb, 0.019 in. x 28 in.

Magnesium

(F.o.b. mill, freight allowed)

Sheet and Plate: FS1-O, 1/4 in., 66¢; 3/16 in., 68¢; 1/2 in., 70¢; B & S Gage 10, 71¢; 12, 75¢. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M, diam 1/4 to 0.311 in., 77¢; 1/2 to 3/4 in., 60.5¢; 1 1/4 to 1.749 in., 56¢; 2 1/2 to 5 in., 51.5¢. Other alloys higher. Base up to 1/4 in. diam, 10,000 lb; 3/4 to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M. In weight per ft. for perimeters less than size indicated: 0.10 to 0.11 lb, 3.5 in., 65.3¢; 0.22 to 0.25 lb, 5.9 in., 62.3¢; 0.50 to 0.59 lb, 8.6 in., 59.7¢; 1.8 to 2.59 lb, 19.5 in., 56.8¢; 4 to 6 lb, 28 in., 52¢. Other alloys higher. Base, in weight per ft of shape: Up to 1/4 lb, 10,000 lb; 1/4 to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, 0.049 to 0.057 in. wall thickness; OD, 1/4 to 5/16 in., \$1.43; 5/16 to 3/4 in., \$1.29; 3/4 to 1 in., 96¢; 1 to 2 in., 79¢; 0.165 to 0.219 in. wall; OD, 3/4 to 1 in., 64¢; 1 to 2 in., 60¢; 2 to 4 in., 59¢. Other alloys higher. Base, OD: Up to 1 1/2 in., 10,000 lb; 1 1/2 to 3 in., 20,000 lb; over 3 in., 30,000 lb.

Titanium

(100,000 lb base, f.o.b. mill)

Commercially pure and alloy grades; Sheets and strip, HR or CR, \$15; Plate, HR, \$12; Wire, rolled and/or drawn, \$10; Bar, HR or forged, \$6; Forgings, \$6.

Nickel, Monel, Inconel

(Base prices, f.o.b. mill)

"A" Nickel Monel Inconel			
Sheet, CR	86 1/4	67 1/2	92 1/4
Strip, CR	92 1/2	70 1/2	98 1/2
Rod, bar	82 1/2	65 1/2	88 1/2
Angles, HR	82 1/2	65 1/2	88 1/2
Plate, HR	84 1/2	66 1/2	90 1/2
Seamless Tube	115 1/4	100 1/4	137 1/2
Shot, blocks	60		

Copper, Brass, Bronze

(Freight included on 500 lb)

	Sheet	Rods	Extruded Shapes
Copper	48.51		50.58
Copper, h-r	50.48	46.88	
Copper, drawn		48.08	
Low brass	45.99	45.68	
Yellow brass	42.87	42.56	
Red brass	47.11	46.80	
Naval brass	47.01	41.07	42.33
Lead brass			39.95
Comm. bronze	48.76	45.45	
Mang. bronze	50.73	44.62	46.18
Phos. bronze	70.50	70.75	
Muntz metal	44.91	40.47	41.72
Ni silver, 10 pct	56.56	59.83	62.89

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	21.50
Aluminum pig	20.00
Antimony, American, Laredo, Tex.	34.50
Beryllium copper, per lb cont'd Be	\$40.00
Beryllium aluminum 5% Be, Dollars per lb contained Be	\$72.75
Bismuth, ton lots	\$2.25
Cadmium, del'd	\$2.00
Cobalt, 97-99% (per lb)	\$2.40 to \$2.47
Copper, electro, Conn. Valley	29.50 to 30.00
Copper, Lake, delivered	30.125
Gold, U. S. Treas., dollars per oz.	\$35.00
Indium, 99.8%, dollars per troy oz.	\$2.25
Iridium, dollars per troy oz.	\$165 to \$175
Lead, St. Louis	13.80
Lead, New York	14.00
Magnesium, 99.3+%, f.o.b. Freeport, Tex., 10,000 lb.	27.00
Magnesium, sticks, 100 to 500 lb.	45.00 to 47.00
Mercury, dollars per 76-lb. flask, f.o.b. New York	\$190 to \$193
Nickel electro, f.o.b. N. Y. warehouse	63.08
Nickel oxide sinter, at Copper Creek, Ont., contained nickel	56.25
Palladium, dollars per troy oz.	\$24.00
Platinum, dollars per troy oz.	\$93
Silver, New York, cents per oz.	85.25
Tin, New York	79.75
Titanium, sponge	\$5.00
Zinc, East St. Louis	11.00
Zinc, New York	11.25-11.83
Zirconium copper, 50 pct	\$6.20

REMELTED METALS

Brass Ingot

(Cents per lb, delivered carloads)

85-5-5-5 ingot	
No. 115	24.50
No. 120	23.75
No. 123	23.25
80-10-10 ingot	
No. 305	28.75
No. 315	26.50
88-10-2 ingot	
No. 210	37.50
No. 215	34.00
No. 245	29.50
Yellow ingot	
No. 405	20.75
Manganese bronze	
No. 421	25.25

Aluminum Ingot

(Cents per lb del'd, 30,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper, max.	24.50-25.50
0.60 copper, max.	24.25-25.00
Piston alloys (No. 122 type)	22.75-23.50
No. 12 alum. (No. 2 grade)	22.00-23.00
108 alloy	22.75-23.50
195 alloy	23.00-25.00
13 alloy (0.60 copper max.)	24.50-25.00
ASX-679	22.50-23.25

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97 1/2%	23.75-24.00
Grade 2—92-95%	23.00
Grade 3—90-92%	22.00
Grade 4—85-90%	21.00-22.00

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 5000 lb lots)

Copper	
Cast, oval, 15 in. or longer	45.14
Electrodeposited	37.98
Flat rolled	45.64
Brass, 80-20	
Cast, oval, 15 in. or longer	43.515
Zinc, flat cast	20.25
Ball, anodes	18.50
Nickel, 99 pct plus	
Cast	79.50
Roller, depolarized	80.50
Cadmium	\$2.15
Silver 999 fine, rolled, 100 oz lots, per troy oz, f.o.b. Bridgeport, Conn.	94%

Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum	63
Copper sulfate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed	30.00
Nickel chloride, 375 lb drum	38.00
Silver cyanide, 100 oz lots, per oz.	75 1/2
Sodium cyanide, 96 pct domestic	
200 lb drums	19.25
Zinc cyanide, 100 lb drum	47.7

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	28 1/2	27 1/2
Yellow brass	21 1/2	19 1/2
Red brass	25 1/2	24 1/2
Comm. bronze	28 1/2	25 1/2
Mang. bronze	30	19 1/2
Brass rod ends	19 1/2	

Custom Smelters' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	23 1/2-24
No. 2 copper wire	22
Light copper	22 1/2
*Refinery brass	19 1/2-20
*Dry copper content	

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	24
No. 2 copper wire	23 1/2
Light copper	22 1/2
No. 1 composition	18 1/2-19
No. 1 comp. turnings	18-18 1/2
Roller brass	14-14 1/2
Brass pipe	14-14 1/2
Radiators	14

Aluminum

Mixed old cast	14-14 1/2
Mixed new clips	14 1/2-16
Mixed turnings, dry	14-14 1/2
Pots and pans	14-14 1/2

Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	23
No. 2 heavy copper and wire	20
Light copper	18
New type shell cuttings	18
Auto radiators (unwashed)	17
No. 1 composition	16 1/2-17
No. 1 composition turnings	16-16 1/2
Unlined red car boxes	15-16
Cocks and faucets	15
Mixed heavy yellow brass	14 1/2
Old rolled brass	14
Brass pipe	14
New soft brass clippings	14 1/2-17 1/2
Brass rod ends	16-16 1/2
No. 1 brass rod turnings	15-16

Aluminum

Alum. platons and struts	7-7 1/2
Aluminum crankcases	10
2S aluminum clippings	14
Old sheet and utensils	10
Borings and turnings	7 1/2
Misc. cast aluminum	10
Dural clips (24S)	10

Zinc

New zinc clippings	5 1/2
Old zinc	4 1/2
Zinc routings	3 1/2
Old die cast scrap	3 1/2

Nickel and Monel

Pure nickel clippings	100
Clean nickel turnings	85
Nickel anodes	100
Nickel rod ends	100
New Monel clippings	33-35
Clean Monel turnings	30-32
Old sheet Monel	14
Nickel silver clippings, mixed	12
Nickel silver turnings, mixed	

Lead

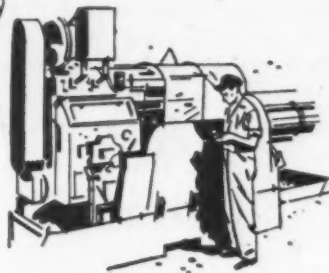
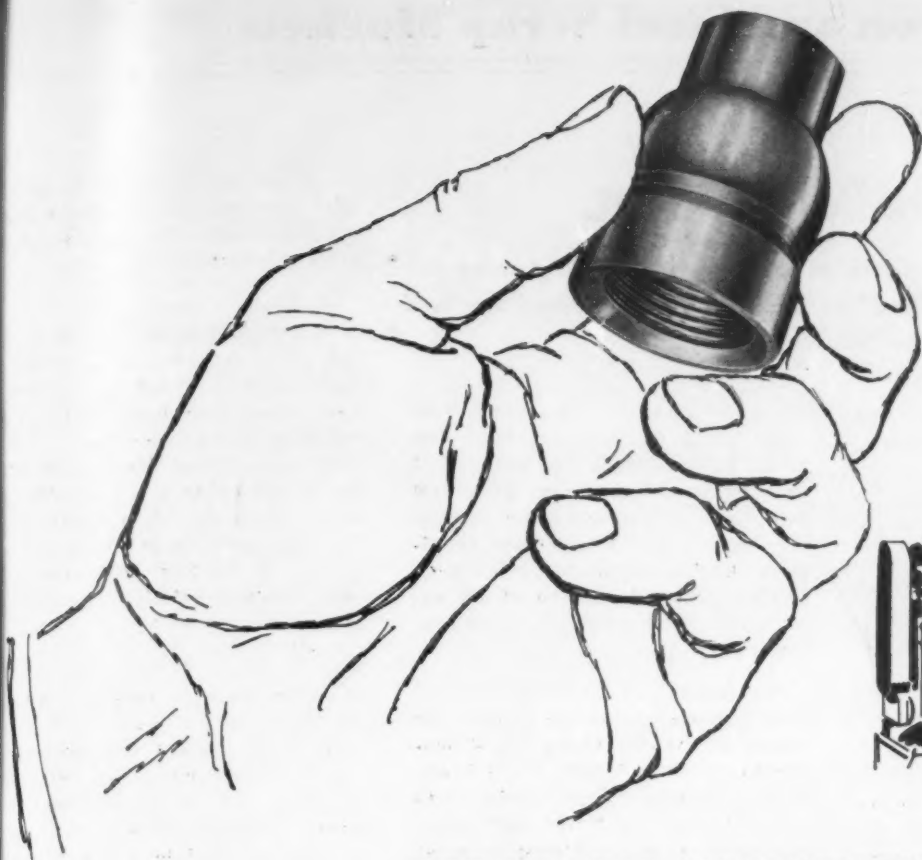
Soft scrap, lead	11-11 1/2
Battery plates (dry)	6 1/2-6 3/4
Batteries, acid free	4.00-4.70

Magnesium

Segregated solids	15-16
Castings	14-15

Miscellaneous

Block tin	60-65
No. 1 pewter	27-40
No. 1 auto babbitt	40
Mixed common babbitt	18-12 1/2
Solder joints	15-15 1/2
Siphon tops	40
Small foundry type	14 1/2
Monotype	13 1/2
Lino. and stereotype	11 1/2
Electrotype	9
Hand picked type shells	5 1/2
Lino. and stereo. dross	5
Electro dross	



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Scrapmen Criticize Defense Dept.

Slap military competition in scrap industry . . . Accuse Defense Dept. of "stalling" on investigation of Armed Services intervention in private industry.

Defense Dept. was blasted last week by leading scrap industry spokesmen. Cause of the sharp criticism leveled by top executives of the Institute of Scrap Iron & Steel and the National Assn. of Waste Material Dealers was government competition in the scrap industry (THE IRON AGE, July 9, 1953, p. 160).

In commenting on an earlier statement by Defense Secretary Wilson that the military services should not compete with private industry unless the service operations are profitable, Scrap Institute's Edwin C. Barringer said:

"... the Scrap Institute believes there is a principle involved—the principle that where private industry satisfactorily renders an essential service the government should not compete with it. Now, according to Mr. Wilson, principle is not a factor. . . ."

Clinton M. White, executive vice-president of NAWMD, accused the Defense Dept. of "stalling" on the investigation it has been asked to conduct by a Senate committee into the question of Armed Services' intervention in private industry.

The association officer said the Air Force did not want the public to know how it computed the savings it says would result if the Air Force installed aluminum sweating furnaces.

Pittsburgh—Prices of openhearth grades dipped \$1 this week in the face of strong resistance. Lower quotations resulted from sale of No. 2 bundles to an independent mill. Otherwise business was sluggish, as consumers either probed the market trying to buy at lower prices or remained out entirely. Low phos is down \$1. Shipments are moving at a lively pace, and inventories are large.

Chicago—Neither the Korean truce nor reports of weakness in a few other market areas had any effect on Chicago's bullish scrap market last week. Prices continued to edge up despite strong consumer resistance. Asking prices, particularly on turnings, were indicative of an expectation that the market would continue strong.

Philadelphia—A major district mill came into the market for steelmaking grades last week, raising No. 2 bundles to \$35.50 to \$36.50. No. 1 heavy melting strengthened slightly to \$44.00 to \$45.00. Turnings trading was brisk, with some spot sales at slightly higher prices.

New York—A large eastern consumer came into the market last week, causing a flurry of activity in an otherwise calm period. But prevailing prices for steelmaking grades were unchanged. Blast furnace grades were generally quiet, but some brokers indicated that shoveling turnings looked slightly more robust.

Detroit—Usual inactivity that precedes closing of automotive lists characterized the Detroit scrap market. Even this situation didn't prevent prices on turnings from dropping \$1 to \$2, indicating a marked weakness on blast furnace grades. Electric furnaces also dropped their prices, bringing low phos down a shade.

Cleveland—Truce signing had no immediate effect here. One broker reported an increase in dealer calls. But for the most part dealers and brokers feel peace in Korea had been discounted by anticipation. Mills with comfortable inventories will undoubtedly be cautious about new buying.

Cincinnati—Mills in this area haven't made a definite decision on August buying prices but no change is expected for openhearth grades. Lack of demand has resulted in some weakness in short turnings and no one will be surprised if this item drops in price. Low phos went up

\$1 to \$48 here as the market generally remained strong. Cast market is still quiet. Foundries are well stocked with rails.

St. Louis—Cessation of the fighting in Korea, had no effect whatever on the scrap market here as the news had been discounted before. Mills have based their buying for several weeks on the likelihood of an armistice being signed. Brokers are finding it difficult to obtain scrap to fill orders especially since Kansas City and Chicago mills have been buying heavily in the Southwest which has been this district's important source of supply.

Birmingham—With the South's largest scrap buyer practically out of the market and shipments held up on some blast furnace and openhearth grades already purchased, movement is almost at a standstill. Some shipments are going north about as fast as they come into the yards and dealers say if there should be a sudden demand for large quantities they would have a hard time filling orders. Some electric furnace bundles and cast moved this week at unchanged prices.

Buffalo—Signing of Korean armistice had no immediately appreciable effect on the Buffalo scrap market. Steady strength prevailed at start of week with dealers busy shipping against old orders placed within prevailing price ranges. Dealers anticipate no drastic price changes at this time. Market position is healthy as yard stocks are limited.

Boston—Korean truce forced the market into an almost complete standstill as the trade waits to see what effect the armistice will have on prices. Only change was in some cast items which moved up slightly. The price rise was not due to a marked increase in demand but resulted from the fact that cast prices had dropped so low that any activity automatically nudged them up somewhat.

West Coast—Mill buying prices for August are expected to remain unchanged from July. Summer heat in California has reduced collections but mills still have heavy scrap inventories and are meeting melt requirements.

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July 30, 1953

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Scrap Prices

(Effective July 28, 1953)

Pittsburgh

No. 1 hvy. melting	\$46.00 to \$47.00
No. 2 hvy. melting	42.00 to 43.00
No. 1 bundles	46.00 to 47.00
No. 2 bundles	40.00 to 41.00
Machine shop turn.	27.00 to 28.00
Mixed bor. and ms. turns.	27.00 to 28.00
Shoveling turnings	31.00 to 32.00
Cast iron borings	31.00 to 32.00
Low phos. punch'gs, plate	48.00 to 49.00
Heavy turnings	42.00 to 43.00
No. 1 RR. hvy. melting	48.00 to 49.00
Scrap rails, random lgth.	49.00 to 50.00
Rails 2 ft and under	54.00 to 55.00
RR. steel wheels	52.50 to 53.50
RR. spring steel	52.50 to 53.50
RR. couplers and knuckles	52.50 to 53.50
No. 1 machinery cast.	49.00 to 50.00
Cupola cast.	43.00 to 44.00
Heavy breakable cast.	41.00 to 42.00
Malleable	50.00 to 51.00

Chicago

No. 1 hvy. melting	\$43.00 to \$45.00
No. 2 hvy. melting	38.00 to 40.00
No. 1 factory bundles	44.00 to 46.00
No. 1 dealers' bundles	43.00 to 45.00
No. 2 dealers' bundles	35.00 to 37.00
Machine shop turn.	23.00 to 25.00
Mixed bor. and turn.	27.00 to 28.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	27.00 to 28.00
Low phos. forge crops	50.00 to 51.00
Low phos. punch'gs, plate	47.00 to 48.00
Low phos. 3 ft and under	46.00 to 48.00
No. 1 RR. hvy. melting	46.00 to 48.00
Scrap rails, random lgth.	50.00 to 51.00
Rerolling rails	57.00 to 58.00
Rails 2 ft and under	55.00 to 57.00
Locomotive tires, cut	49.00 to 51.00
Cut bolsters & side frames	48.00 to 50.00
Angles and splice bars	50.00 to 51.00
RR. steel car axles	54.00 to 56.00
RR. couplers and knuckles	50.00 to 52.00
No. 1 machinery cast.	46.00 to 47.00
Cupola cast.	42.00 to 44.00
Heavy breakable cast.	40.00 to 41.00
Cast iron brake shoes	38.00 to 40.00
Cast iron car wheels	45.00 to 47.00
Malleable	45.00 to 47.00
Stove plate	37.00 to 39.00

Philadelphia Area

No. 1 hvy. melting	\$44.00 to \$44.50
No. 2 hvy. melting	39.00 to 40.00
No. 1 bundles	44.00 to 45.00
No. 2 bundles	35.50 to 36.50
Machine shop turn.	27.00 to 28.00
Mixed bor., short turn.	31.00 to 32.00
Shoveling turnings	32.00 to 34.00
Clean cast chem. borings	38.50 to 39.00
Low phos. 5 ft and under	44.00 to 45.00
Low phos. 2 ft and under	46.00 to 47.00
Low phos. punchings	46.00 to 47.00
Elec. furnace bundles	45.00 to 46.00
Heavy turnings	42.00 to 43.00
RR. steel wheels	50.00 to 51.00
RR. spring steel	49.00 to 50.00
Rails 18 in. and under	55.00 to 56.00
Cupola cast.	38.00 to 39.00
Heavy breakable cast.	41.00 to 43.00
Cast iron car wheels	46.00 to 47.00
Malleable	46.00 to 47.00
Unstripped motor blocks	31.00 to 32.00
No. 1 machinery cast.	46.00 to 47.00
Charging box cast.	39.00 to 40.00

Cleveland

No. 1 hvy. melting	\$45.00 to \$46.00
No. 2 hvy. melting	41.00 to 42.00
No. 1 bundles	45.00 to 46.00
No. 2 bundles	39.00 to 40.00
No. 1 busheling	45.00 to 46.00
Machine shop turn.	24.00 to 25.00
Mixed bor. and turn.	28.00 to 29.00
Shoveling turnings	28.00 to 29.00
Cast iron borings	28.00 to 29.00
Low phos. 2 ft and under	47.00 to 48.00
Drop forge flashings	45.00 to 46.00
No. 1 RR. hvy. melting	47.00 to 48.00
Rails 3 ft and under	54.00 to 55.00
Rails 18 in. and under	56.00 to 57.00
Railroad grate bars	40.00 to 41.00
Steel axle turnings	38.00 to 39.00
Railroad cast	49.00 to 50.00
No. 1 machinery cast.	50.00 to 51.00
Stove plate	44.00 to 45.00
Malleable	50.00 to 51.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Youngstown

No. 1 hvy. melting	\$45.00 to \$46.00
No. 2 hvy. melting	42.00 to 43.00
No. 1 bundles	45.00 to 46.00
No. 2 bundles	40.00 to 41.00
Machine shop turn.	29.00 to 30.00
Shoveling turnings	33.00 to 34.00
Cast iron borings	33.00 to 34.00
Low phos. plate	48.00 to 49.00

Buffalo

No. 1 hvy. melting	\$43.00 to \$44.00
No. 2 hvy. melting	40.00 to 40.50
No. 1 busheling	43.00 to 44.00
No. 1 bundles	43.00 to 44.00
No. 2 bundles	38.00 to 38.50
Machine shop turn.	26.00 to 27.00
Mixed bor. and turn.	31.00 to 31.50
Shoveling turnings	32.00 to 32.50
Cast iron borings	31.00 to 31.50
Low phos. plate	47.00 to 48.00
Scrap rails, random lgth.	47.00 to 48.00
Rails 2 ft and under	53.00 to 54.00
RR. steel wheels	53.00 to 53.50
RR. spring steel	53.00 to 53.50
RR. couplers and knuckles	53.00 to 53.50
No. 1 machinery cast.	44.00 to 45.00
No. 1 cupola cast.	40.00 to 41.00

Detroit

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$38.00 to \$39.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 bundles, openhearth	40.00 to 41.00
No. 2 bundles	32.00 to 33.00
New busheling	36.00 to 37.00
Drop forge flashings	36.00 to 37.00
Machine shop turn.	19.00 to 20.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	21.00 to 22.00
Electric furnace, bundles	40.00 to 41.00
Low phos. punch'gs, plate	38.00 to 39.00
No. 1 cupola cast.	43.00
Heavy breakable cast.	34.00
Stove plate	38.00
Automotive cast.	43.00

St. Louis

No. 1 hvy. melting	\$45.00 to \$46.00
No. 2 hvy. melting	36.50 to 37.50
No. 2 bundled sheets	33.00 to 34.00
Machine shop turn.	20.00 to 21.00
Shoveling turnings	23.50 to 24.50
Cast iron borings	15.00 to 16.00
Rails, random lengths	48.00 to 50.00
Rails 18 in. and under	53.00 to 55.00
Locomotive tires, uncut	44.00 to 46.00
Angles and splice bars	47.00 to 48.00
Std. steel car axles	55.00 to 56.00
RR. spring steel	49.00 to 50.00
Cupola cast.	41.00 to 42.00
Hvy. breakable cast.	37.00 to 38.00
Cast iron brake shoes	40.00 to 41.00
Stove plate	34.00 to 35.00
Cast iron car wheels	43.00 to 44.00
Malleable	46.00 to 47.00
Unstripped motor blocks	37.00 to 38.00

New York

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$36.50 to \$37.50
No. 2 hvy. melting	30.00 to 31.00
No. 2 bundles	28.00 to 29.00
Low phos. 2 ft and less	39.50 to 40.50
Machine shop turn.	20.00
Mixed bor. and turn.	20.00
Shoveling turnings	24.50 to 25.00
Clean cast chem. borings	29.00 to 30.00
No. 1 machinery cast.	41.00 to 42.00
Mixed yard cast.	33.00 to 34.00
Charging box cast.	34.00 to 35.00
Heavy breakable cast.	34.00 to 35.00
Unstripped motor blocks	22.00 to 23.00

Birmingham

No. 1 hvy. melting	\$33.00 to \$34.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 bundles	33.00 to 34.00
No. 2 bundles	29.00 to 30.00
No. 1 busheling	29.50 to 30.50
Machine shop turn.	23.00 to 23.50
Shoveling turnings	24.00 to 25.00
Cast iron borings	24.00 to 25.00
Electric furnace bundles	32.00 to 33.00
Bar crops and plate	39.00 to 40.00
Structural and plate, 2 ft.	36.00 to 37.00
No. 1 RR. hvy. melting	35.00 to 36.00
Scrap rails, random lgth.	41.00 to 42.00
Rerolling rails	46.00 to 47.00
Rails, 18 in. and under	45.00 to 46.00
Angles & splice bars	45.00 to 46.00
Std. steel axles	45.00 to 46.00
No. 1 cupola cast.	43.00 to 44.00
Stove plate	40.00 to 41.00
Cast iron car wheels	46.00 to 47.00
Charging box cast.	30.00 to 31.00
Heavy breakable	30.00 to 31.00
Unstripped motor blocks	32.00 to 33.00
Mashed tin cans	17.00 to 18.00

Boston

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$33.00 to \$34.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 bundles	32.50 to 33.00
No. 2 bundles	28.00 to 29.00
No. 1 busheling	32.50 to 33.00
Elec. furnace, 3 ft & under	34.00 to 35.00
Machine shop turn.	18.00 to 18.50
Mixer bor. and short turn.	21.00
Shoveling turnings	21.50 to 22.00
Clean cast chem. borings	28.17
No. 1 machinery cast	30.00 to 31.00
Mixed cupola cast.	29.00 to 30.00
Heavy breakable cast.	30.00 to 31.00
Stove plate	27.00 to 28.00
Unstripped motor blocks	22.00

Cincinnati

Brokers' buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$42.00 to \$43.00
No. 2 hvy. melting	38.00 to 39.00
No. 1 bundles	43.00 to 43.00
No. 2 bundles	36.00 to 37.00
Machine shop turn.	21.00 to 22.00
Mixed bor. and turn.	25.00 to 26.00
Shoveling turnings	26.00 to 27.00
Cast iron borings	25.00 to 26.00
Low phos. 18 in. & under	47.00 to 48.00
Rails, random lengths	46.00 to 47.00
Rails, 18 in. and under	53.00 to 54.00
No. 1 cupola cast.	42.00 to 43.00
Hvy. breakable cast.	37.00 to 38.00
Drop broken cast.	48.00 to 49.00

San Francisco

No. 1 hvy. melting	\$28.00
No. 2 hvy. melting	24.00
No. 1 bundles	25.00
No. 2 bundles	22.00
No. 3 bundles	18.00
Machine shop turn.	10.00
Cast iron borings	15.00
No. 1 RR. hvy. melting	22.00
No. 1 cupola cast.	\$38.00 to 39.00

Los Angeles

No. 1 hvy. melting	\$24.00
No. 2 hvy. melting	20.00
No. 1 bundles	22.00
No. 2 bundles	20.00
No. 3 bundles	16.00
Mach. shop turn.	8.00
Shoveling turnings	12.00
Cast iron borings	12.00
Elec. fur. 1 ft and under	20.00
No. 1 RR. hvy. melting	24.00
No. 1 cupola cast.	\$36.00 to 37.00

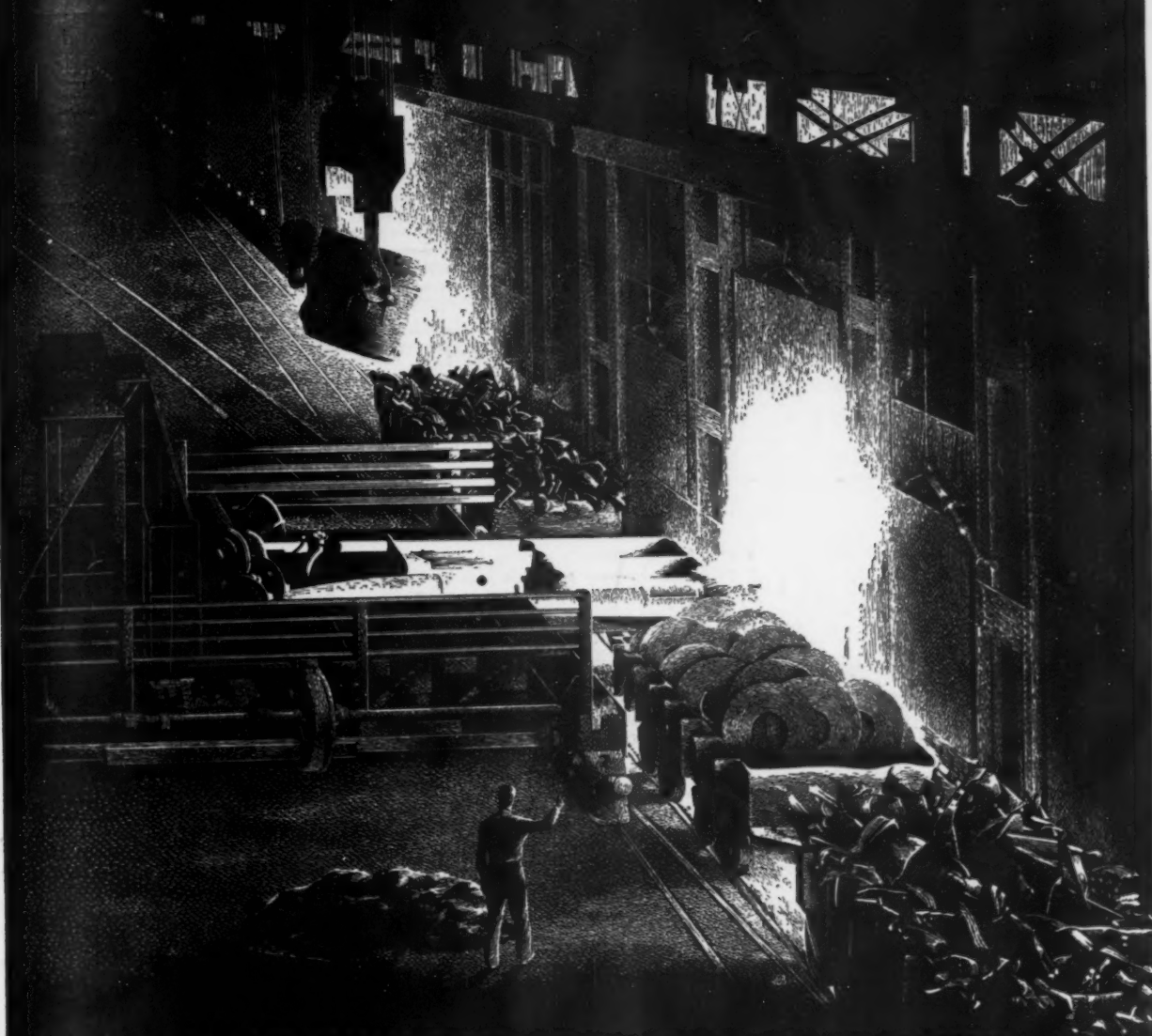
Seattle

No. 1 hvy. melting	\$31.00
No. 2 hvy. melting	27.00
No. 1 bundles	28.00
No. 2 bundles	23.00
No. 1 cupola cast.	37.00
Mixed yard cast.	35.00

Hamilton Ont.

No. 1 hvy. melting	\$32.00
No. 1 bundles	32.50
No. 2 bundles	32.00
Mechanical bundles	30.50
Mixed steel scrap	28.50
Bushelings	27.50
Bush., new fact. prep'd.	29.50
Bush., new fact. unprep'd.	22.50
Short steel turnings	26.50
Mixed bor. and turn.	32.50
Rails, remelting	41.00
Rails, rerolling	41.00
Cast scrap	48.00

for the purchase or sale of *scrap*



CONSULT OUR NEAREST OFFICE FOR THE PURCHASE AND SALE OF SCRAP
LURIA BROTHERS AND COMPANY, INC.

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 CHICAGO, ILLINOIS LEBANON, PENNA. PUEBLO, COLORADO SEATTLE, WASH.

LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Comparison of Prices

(Effective July 28, 1953)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	July 28 1953	July 21 1953	June 30 1953	July 29 1952
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	3.925¢	3.925¢	3.925¢	3.775¢
Cold-rolled sheets	4.775	4.775	4.775	4.575
Galvanized sheets (10 ga.)	5.275	5.275	5.275	5.075
Hot-rolled strip	3.925	3.925	3.925	3.725
Cold-rolled strip	5.575	5.575	5.575	5.20
Plate	4.10	4.10	4.10	3.90
Plates wrought iron	9.00	9.00	9.00	9.00
Stainl's C-R strip (No. 302)	41.50	41.50	41.50	36.75*
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	\$8.95	\$8.95	\$8.95	\$8.95
Tinplate, electro (0.50 lb.)	7.65	7.65	7.65	7.65
Special coated mfg. ternes	7.75	7.75	7.75	7.75
Bars and Shapes: (per pound)				
Merchant bars	4.15¢	4.15¢	4.15¢	3.95¢
Cold finished bars	5.20	5.20	5.20	4.925
Alloy bars	4.875	4.875	4.875	4.675
Structural shapes	4.10	4.10	4.10	3.85
Stainless bars (No. 302)	35.50	35.50	35.50	31.50*
Wrought iron bars	10.05	10.05	10.05	10.05
Wire: (per pound)				
Bright wire	5.525¢	5.525¢	5.525¢	5.225¢
Nails: (per 100 lb.)				
Heavy rails	\$4.325	\$4.325	\$4.325	\$3.775
Light rails	5.20	5.20	5.20	4.25
Semifinished Steel: (per net ton)				
Re-rolling billets	\$62.00	\$62.00	\$62.00	\$59.00
Slabs, re-rolling	62.00	62.00	62.00	59.00
Forging billets	75.50	75.50	75.50	70.50
Alloy blooms, billets, slabs	82.00	82.00	82.00	76.00
Wire Rod and Skelp: (per pound)				
Wire rods	4.525¢	4.525¢	4.525¢	4.325¢
Skelp	3.75	3.75	3.75	3.55
Finished Steel Composite: (per pound)				
Base price	4.634¢	4.634¢	4.634¢	4.376¢

* Add 4.7 pct.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips.

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mail.	Bess.	Low Phos.
Bethlehem B3...	58.00	58.50	59.00	59.50	.....
Birmingham R3...	52.38	52.88	.....	.....	.....
Birmingham W9...	52.38	52.88	.....	.....	.....
Birmingham S5...	52.38	52.88	.....	.....	.....
Buffalo R3...	56.00	56.50	57.00	.....	.....
Buffalo H1...	56.00	56.50	57.00	.....	.....
Buffalo W6...	56.00	56.50	57.00	.....	.....
Chicago 14...	56.00	56.50	56.50	57.00	.....
Cleveland A5...	56.00	56.50	56.50	57.00	61.00
Cleveland R3...	56.00	56.50	56.50	.....	.....
Danversfield L3...	52.50	52.50	52.50	.....	.....
Duluth 14...	56.00	56.50	56.50	57.00	.....
Erie 14...	56.00	56.50	56.50	.....	.....
Everett M6...	.....	63.25	63.75	57.00	.....
Fontana K1...	62.00	62.50	.....	.....	.....
Geneva, Utah C7...	56.00	56.50	56.50	57.00	61.00
Granite City G2...	57.90	58.40	58.90	.....	.....
Hubbard Y1...	56.00	56.50	56.50	.....	.....
Minneapolis C6...	58.00	59.00	59.00	.....	.....
Monessen P6...	56.00	.....	.....	.....	.....
Neville Isl. P4...	56.00	56.50	56.50	.....	.....
Pittsburgh U1...	56.00	.....	.....	57.00	.....
Sharpville S3...	56.00	56.50	56.50	57.00	.....
Steelton B3...	58.00	58.50	59.00	59.50	64.00
Swedeland A2...	60.00	60.50	61.00	61.50	.....
Toledo 14...	56.00	56.50	56.50	57.00	.....
Troy, N. Y. R3...	58.00	58.50	59.00	59.50	64.00
Youngstown Y1...	56.00	56.50	56.50	57.00	.....
N. Tonawanda T1...	.....	56.50	57.00	.....	.....

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct), 50¢ per ton for each 0.50 pct manganese over 1 pct, \$2 per ton for 0.5 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. Subtract 35¢ per ton for phosphorus, content 0.70 and over.

Silvery Iron: Buffalo, H1, \$68.25; Jackson, J1, G1, \$67.00. Add \$1.50 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. Add \$1 per ton for 0.75 pct or more phosphorus. Manganese as above. Base iron ferroalloy prices are \$1 over comparable silvery iron.

Pig Iron: (per gross ton)

	July 28 1953	July 21 1953	June 30 1953	July 29 1952
Foundry, del'd Phila.	\$62.19	\$62.19	\$60.89	\$60.89
Foundry, Valley	56.50	56.50	55.75	56.00
Foundry, Southern, Cin'ti	60.43	60.43	59.43	58.93
Foundry, Birmingham	52.88	52.88	51.88	51.38
Foundry, Chicago†	56.50	56.50	55.50	56.00
Basic del'd Philadelphia	61.27	61.27	59.77	59.77
Basic, Valley furnace	56.00	56.00	55.25	54.50
Malleable, Chicago†	56.50	56.50	55.50	56.00
Malleable, Valley	56.50	56.50	55.75	56.00
Ferromanganese, cents per lb.	10.00¢	10.00¢	10.00¢	10.00¢

† The switching charge for delivery to foundries in the Chicago district is \$1 per ton.

‡ Average of U. S. Prices quoted on Ferroalloy pages, 78 pct Mn base

Pig Iron Composite: (per gross ton)

Pig iron	\$56.76	\$56.76	\$56.91	\$55.94
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Scrap: (per gross ton)

No. 1 steel, Pittsburgh	\$46.50	\$47.50	\$45.50	\$43.00*
No. 1 steel, Phila. area	44.25	43.50	43.50	40.75
No. 1 steel, Chicago	44.00	43.50	41.50	41.50
No. 1 bundles, Detroit	40.50	40.50	37.50	41.15*
Low phos., Youngstown	48.50	48.50	47.50	46.50*
No. 1 mach'y cast, Pittsburgh	49.50	49.50	49.50	52.50
No. 1 mach'y cast, Philadel'a	46.50	45.50	45.50	48.50
No. 1 mach'y cast, Chicago	46.50	45.50	44.50	44.50

* Basing pt., less broker's fee. † Shipping pt., less broker's fee.

Steel Scrap Composite: (per gross ton)

No. 1 heavy melting scrap	\$44.92	\$44.83	\$43.50	\$41.75
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Coke, Connellsville: (per net ton at oven)

Furnace coke, prompt	\$14.75	\$14.75	\$14.75	\$14.75
Foundry coke, prompt	17.25	17.25	17.25	17.75

Nonferrous Metals: (cents per pound to large buyers)

Copper, electrolytic, Conn.	29.875¢	29.875¢	29.875¢	34.50
Copper, Lake, Conn.	30.125	30.125	30.125	34.50
Tin, Straits, New York	80.25¢	78.25*	90.50	\$121.50
Zinc, East St. Louis	11.00	11.00	11.00	18.50
Lead, St. Louis	13.55	13.55	13.55	18.50
Aluminum, virgin ingot	21.50	21.00†	20.50	19.00
Nickel, electrolytic	63.08	63.08	63.08	69.50
Magnesium, ingot	27.00	27.00	27.00	24.50
Antimony, Laredo, Tex.	34.50	34.50	34.50	39.00

† Tentative. ‡ Average. * Revised.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

STAINLESS STEELS

Base price cents per lb., f.o.b.

Product	301	302	303	304	316	321	347	410	416	430
Ingot, re-rolling	16.25	17.25	18.75	18.25	28.00	22.75	24.50	14.00	.....	14.15
Slabs, billets, re-rolling	20.50	22.75	24.75	23.75	36.25	29.50	32.25	18.25	.....	18.50
Forg. discs, die blocks, rings	38.50	38.50	41.50	40.50	60.00	45.50	50.75	31.00	31.75	31.75
Billets, forging	29.50	29.75	32.25	31.00	46.50	35.25	39.50	24.00	24.50	24.50
Bars, wires, structurals	35.25	35.50	38.25	37.25	55.50	42.00	46.75	28.75	29.25	29.25
Plates	37.25	37.50	39.75	39.75	59.00	45.75	51.25	30.00	30.50	30.50
Sheets	37.50	37.50	39.75	39.75	59.00	45.75	51.25	30.00	30.50	30.50
Strip, hot-rolled	29.75	32.00	34.75	34.25	55.00	42.00	46.50	28.25	.....	27.00
Strip, cold-rolled	38.25	41.50	45.50	43.75	66.50	54.50	59.25	34.25	41.25	34.75

STAINLESS STEEL PRODUCING POINTS—Sheets: Midland, Pa., C11; Brackenridge, Pa., A3; Butler, Pa., A7; McKeesport, Pa., U1; Washington, Pa., W2; (type 316 add 4.5¢) J2; Baltimore, Md.; Middletown, O., A7; Massillon, O., R3; Gary, Ind.; Bridgeville, Pa., U2; New Castle, Ind.; Ft. Wayne, Ind.; Lockport, N. Y., R4.

Strip: Midland, Pa., C11; Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; (type 316 add 4.5¢) W. Leeburg, Pa., A3; Bridgeville, Pa., U2; Detroit, A2; Canton-Massillon, O., R3; Middletown, O., A7; Harrison, N. J., D3; Youngstown, O., S4; Sharon, Pa., S1 (type 301 add 1/4¢); Butler, Pa., A7; Wallingford, Conn., W1.

Bars: Baltimore, A7; Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., J2; McKeesport, Pa., U1, F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R3; Chicago, U1; Syracuse, N. Y., C11; Watervliet, N. Y., S4; Waukegan, Ind.; Lockport, N. Y., S4; Canton, O., T5; Ft. Wayne, Ind.

Wire: Waukegan, Ind.; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, Ind.; Harrison, N. J., D3; Baltimore, A7; Dunkirk, A3; Monessen, Pa.; Syracuse, C11; Bridgeville, U2.

Structurals: Baltimore, A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, C11.

Plates: Brackenridge, Pa., A3; Butler, Pa., A7; Chicago, U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind.; Lockport, N. Y., S4; Middletown, A7; Washington, Pa., U2; Cleveland, Massillon, R3.

Forged discs, die blocks, rings: Pittsburgh, C11; Syracuse, C11; Ferndale, Mich., A3; Washington, Pa., J2.

Forging/billets: Midland, Pa., C11; Baltimore, A7; Washington, Pa., J2; McKeesport, F1; Massillon, Canton, O., R3; Watervliet, A3; Pittsburgh, Chicago, U1; Syracuse, C11.

Ceramic Coating of Jet Engine Parts

another of the precision-processing operations

with *the Productive Flames of GAS*

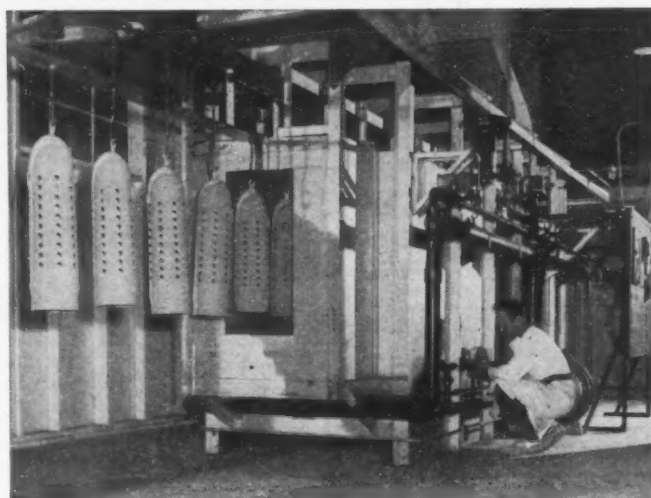
at **SOLAR AIRCRAFT CO., San Diego, California**

Solaramic, a new family of ceramic coatings, is used in Solar Aircraft Company's Solaramic pilot plant. The highly refractory materials used to make Solaramic frits are fused in a Gas furnace which maintains carefully controlled temperature to 2500°F.

Applied to jet engine parts, this new coating protects pieces against corrosion and oxidation, instead of acting only as an insulating medium. In addition, this GAS-fired ceramic coating:

- ★ Reduces hot spots on parts
- ★ Minimizes cracking and warping
- ★ Increases fatigue life
- ★ Improves gall resistance under high-temperature conditions

Parts are sprayed with Solaramic and placed in a GAS-fired semi-muffle oven furnace where the temperature is precisely and automatically controlled. Firing temperatures range between 1700 and 2000°F, assuring dependable adherence of the coating to the metal.



Continuous GAS-fired Furnace in use in conveyORIZED production line for Solaramic Jet parts.

The Productive Flames of GAS are utilized in this industrial process because GAS:

1. Allows rapid temperature recovery after charging
2. Permits exact control of temperatures, *automatically*
3. Permits easy adjustment of furnace atmosphere as required

GAS is the modern fuel for all industry, because GAS is versatile in application, clean, and can be automatically controlled to provide exact temperatures required. Modern Industrial Gas Equipment fits production-line techniques. For the facts, see your Gas Company Representative.



AMERICAN GAS ASSOCIATION
420 LEXINGTON AVENUE • NEW YORK 17, N.Y.

IRON AGE

**STEEL
PRICES***(Effective
July 28, 1953)**Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.*

		INGOTS		BILLETS, BLOOMS, SLABS			PIPE SKELP	PIL- ING	SHAPES STRUCTURALS		STRIP			
		Carbon Forging Net Ton	Alloy Net Ton	Carbon Re-rolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton			Carbon	Hi Str. Low Alloy	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy
EAST	Bethlehem, Pa.					\$82.00 B3			4.15 B3	6.20 B3				
	Buffalo, N. Y.			\$62.00 B3	\$75.50 B3, R3	\$82.00 B3, R3		4.925 B3	4.15 B3	6.20 B3	3.925 B3, R3	5.45 B3	6.00 B3	8.425 B3
	Claymont, Del.													
	Coatesville, Pa.													
	Conschohocken, Pa.										4.325 A2		6.20 A2	
	Harrisburg, Pa.													
	Hartford, Conn.													
	Johnstown, Pa.			\$62.00 B3	\$75.50 B3	\$82.00 B3			4.15 B3	6.20 B3				
	Newark, N. J.													
	New Haven, Conn.											5.95 A5 6.20 D1		
	Phoenixville, Pa.													
	Putnam, Conn.													
	Sparrows Pt., Md.										3.925 B3	5.45 B3	6.00 B3	8.425 B3
	Worcester, Mass.													
MIDDLE WEST	Trenton, N. J.													
	Alton, Ill.													
	Ashland, Ky.										3.925 A7			
	Canton-Massillon, Ohio				\$75.50 R3	\$82.00 R3								
	Chicago, Ill.			\$62.00 U1	\$75.50 R3, U1, W8	\$82.00 U1, W8, R3		4.925 U1	4.10 U1, W8	6.175 U1	3.925 A1, W8	5.95 A1	5.95 R3	
	Sterling, Ill.													
	Cleveland, Ohio				\$75.50 R3							5.45 A5, J3		7.00 J3
	Detroit, Mich.		\$63.00 R5		\$78.50 R5	\$85.00 R5					4.225 G3 4.40 M2	5.45 G3, M2 5.95 D1 6.05 D2	6.50 G3	7.90 D1 8.50 G3
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana			\$62.00 U1	\$75.50 U1	\$82.00 U1, Y1		4.925 I3	4.10 I3, U1	6.175 U1, I3	3.925 I3, U1, Y1	5.70 I3	5.95 U1, I3 6.45 Y1	
	Granite City, Ill.													
	Kokomo, Ind.											5.45 A7		
	Middletown, Ohio													
	Niles, Ohio Sharon, Pa.										4.225 S1	5.80 S1	5.95 S1	7.65 S1
	Pittsburgh, Pa. Midland, Pa.	\$59.00 U1	\$62.00 U1	\$62.00 U1 \$62.50 J3	\$75.50 J3, U1	\$82.00 U1	3.75 U1 3.85 J3	4.925 U1	4.10 J3, U1	6.175 J3, U1	4.425 S7, S9 J3 6.15 S7	5.45 B4, J3 6.15 S7		7.00 J3
	Portsmouth Ohio													
	Weirton, Wheeling Follansbee, W. Va.								4.35 W3		4.025 W3	5.45 F3, W3	6.30 W3	
	Youngstown, Ohio					\$82.00 Y1	3.75 R3, U1		4.10 Y1		3.925 R3, U1, Y1	5.45 R3, Y1	5.95 U1, R3 6.45 Y1	7.60 R3 8.30 Y1
WEST	Fontana, Cal.	\$86.00 K1	\$88.00 K1	\$81.00 K1	\$94.50 K1	\$101.00 K1			4.75 K1	6.825 K1	4.70 K1	7.35 K1	7.05 K1	
	Geneva, Utah				\$75.50 C7				4.10 C7	6.175 C7				
	Kansas City, Mo.								4.80 S2	6.875 S2	4.625 S2		6.65 S2	
	Los Angeles, Torrance, Cal.				\$94.50 B2	\$102.00 B2			4.80 B2, C7	6.85 B2	4.675 B2, C7			
	Minnequa, Colo.													
	San Francisco, Niles, Pittsburg, Cal.				\$94.50 B2				4.75 B2 4.91 P9	6.80 B2	4.675 B2, C7			
	Seattle, Wash.				\$94.50 B2, S11				4.85 B2	6.90 B2				
SOUTH	Atlanta, Ga.										4.475 A8			
	Fairfield, Ala. Alabama City, Ala.			\$62.00 T2	\$75.50 T2				4.10 R3, T2	6.175 T2	3.925 R3, T2		5.95 T2	
	Houston, Texas				\$85.50 S2	\$92.00 S2			4.60 S2		4.425 S2			

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

IRON AGE

SHEETS

WIRE
ROD

TINPLATE†

BLACK
PLATE

PRICES
STEEL

(Effective
July 28, 1953)

Hot-rolled 16 ga. & hvyr.	Cold- rolled	Galvanized 10 ga.	Enameling 12 ga.	Long Terne 10 ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot- rolled 19 ga.		Cokes* 1.25-lb. base box	Electro* 0.25-lb. base box	Holloware Enameling 29 ga.	
3.925 B3	4.775 B3				5.90 B3	7.225 B3			4.525 W6				Bethlehem, Pa.
													Buffalo, N. Y.
													Claymont, Del.
4.325 A2					6.15 A2					† Special coated mfg terne deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate 55 to 128 lb deduct \$2.29 from 1.25-lb coke base box. * COKE: 1.50-lb add 25¢. ELECTRO: 0.50-lb add 25¢; 0.75-lb add 65¢.			Coatesville, Pa.
													Consabohocken, Pa.
													Harrisburg, Pa.
									4.525 B3				Hartford, Conn.
													Johnstown, Pa.
													Newark, N. J.
													New Haven, Conn.
4.025 U1	4.875 U1												Phoenixville, Pa.
3.925 B3	4.775 B3	5.275 B3			5.90 B3	7.225 B3	8.075 B3		4.625 B3	\$8.80 U1	\$7.50 U1	6.60 U1	Morrisville, Pa.
									4.825 A5	\$8.80 B3	\$7.50 B3		Sparrows Pt., Md.
													Worcester, Mass.
													Trenton, N. J.
3.925 A7		5.275 A7	5.175 A7										Alton, Ill.
		5.275 R3											Ashland, Ky.
3.925 A1, W3					5.90 U1				4.525 A5, N4, R3				Canton-Massillon, Ohio
									4.625 N4				Chicago, Ill.
3.925 J3, R3	4.775 J3, R3		5.175 R3		5.90 J3, R3	7.225 J3, R3			4.525 A5				Sterling, Ill.
4.125 G3	4.975 G3				6.375 G3	7.675 G3							Cleveland, Ohio
													Detroit, Mich.
													Duluth, Minn.
3.925 I3, U1, Y1	4.775 I3, U1, Y1	5.275 U1 5.325 I3	5.175 I3, U1	5.675 U1	5.90 U1, I3 6.40 Y1	7.225 U1 7.725 Y1				\$8.70 I3, U1, Y1	\$7.40 I3, U1	6.10 U1, Y1	Gary, Ind. Harbor, Indiana
		5.475 G2	5.875 G2								\$7.60 G2	6.30 G2	Granite City, Ill.
		5.375 C9											Kokomo, Ind.
	4.775 A7		5.175 A7	5.675 A7									Middletown, Ohio
4.225 S1				5.45 S1	5.90 S1						\$7.40 R3		Niles Ohio Sharon, Pa.
3.925 J3, U1, P6	4.775 J3, U1	5.275 U1	5.175 U1		5.90 J3, U1	7.225 J3, U1	7.925 U1		4.525 A5 4.725 P6	\$8.70 J3, U1	\$7.40 J3, U1	6.10 U1	Pittsburgh Pa. Midland, Pa.
	5.775 D1							4.725 D1					Portsmouth, Ohio
3.925 W3, W5	4.775 W3, W5	5.275 W3, W5		5.675 W3, W5		7.475 W3				\$8.70 W3, W5	\$7.40 W3, W5	6.55 W5	Weirton, Wheeling, Fellansbee, W. Va.
3.925 R3, U1, Y1	4.775 R3, Y1				5.90 U1, R3 6.40 Y1	7.225 R3 7.725 Y1			4.525 Y1	\$8.70 R3			Youngstown, Ohio
4.20 K1	5.875 K1				7.00 K1	8.275 K1			5.325 K1				Fontana, Cal.
4.025 C7													Geneva, Utah
									4.865 S2				Kansas City, Mo.
4.025 C7		6.025 C7						5.325 B2					Los Angeles, Torrance, Cal.
													Minnequa, Colo.
4.025 C7	5.725 C7	6.025 C7							5.175 C7	\$9.45 C7	\$8.15 C7		San Francisco, Niles Pittsburg, Cal.
													Seattle, Wash.
													Atlanta, Ga.
3.925 R3, T2	4.775 T2	5.275 R3, T2			5.90 T2			5.125 T2 5.225 R3	4.525 T2, R3	\$8.80 T2	\$7.50 T2		Fairfield Ala. Alabama City, Ala.
4.025 S2									4.925 S2				Houston, Texas

IRON AGE

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

**STEEL
PRICES**(Effective
July 28, 1953)

	BARS						PLATES				WIRE
	Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mil's. Bright
EAST	Bethlehem, Pa.			4.875 B3	6.275 B3	6.225 B3					
	Buffalo, N. Y.	4.15 B3,R3	4.15 B3, R3	5.25 B5	4.875 B3,R3	6.275 B3 6.325 B5	4.10 B3			6.25 B3	5.525 W6
	Claymont, Del.										
	Coatesville, Pa.						4.35 L4		5.75 L4		
	Conschocken, Pa.						4.55 A2	5.15 A2		6.50 A2	
	Harrisburg, Pa.										
	Hartford, Conn.		5.75 R3		6.775 R3						
	Johansstown, Pa.	4.15 B3	4.15 B3		4.875 B3	6.225 B3	4.10 B3		5.55 B3	6.25 B3	5.525 B3
	Newark, N. J.		5.70 W10		6.65 W10						
	New Haven, Conn.										
	Camden, N. J.				6.50 P10						
	Putnam, Conn.		5.85 W10								
	Sparrows Pt., Md.	4.15 B3					4.10 B3		5.55 B3	6.25 B3	5.625 B3
	Palmer, Worcester, Mansfield, Mass.		5.75 B5		6.775 B5						5.825 A5, W6
	Trenton, N. J.										
	Alton, Ill.										
	Ashland, Ky.						4.10 A7				
	Canton-Massillon, Ohio	4.15 R3		5.20 R2,R3	4.875 R3	6.325 R2,R3					
	Chicago, Ill.	4.15 R3, U1, W8	4.15 R3 4.90 N4	5.20 A5,W10, W8,B5, L2	4.875 U1, W8,R3	6.325 A5,W8, W10, L2,R3, B5	4.10 U1,W8	5.15 U1	5.55 U1	6.25 U1	5.525 A5, R3,N4 5.625 W7
	Cleveland, Ohio	4.15 R3	4.15 R3	5.20 A5,C13		6.325 A5,C13	4.10 J3,R3	5.15 J3		6.25 J3	5.525 A5, R3,C13
MIDDLE WEST	Detroit, Mich.	4.30 R5 4.50 G3		5.35 R5,P8 5.40 B5 5.45 P3	5.025 R5 5.225 G3	6.475 R5,P8 6.525 B5,P3	6.875 G3	4.65 G3		7.10 G3	
	Duluth, Minn.										5.525 A5
	Gary Ind. Harbor Crawfordsville, Indiana	4.15 I3, U1, Y1	4.15 I3, U1, Y1	5.20 R3	4.875 I3, U1, Y1	6.325 R3,M5	6.225 U1,I3 6.725 Y1	4.10 I3, U1, Y1	5.15 I3	5.55 U1	6.25 U1,I3 6.75 Y1
	Granite City, Ill.										
	Kokomo, Ind.										5.625 C9
	Sterling, Ill.	4.75 N4	5.00 N4								5.625 N4
	Niles, Ohio Sharon, Pa.						4.10 S1		5.70 S1	6.25 S1	
	Pittsburgh, Pa. Midland, Pa.	4.15 J3, U1	4.15 J3, U1	5.20 A5,J3, W10,R3	4.875 U1	6.325 A5, W10	6.225 J3, U1	4.10 J3, U1	5.15 U1	5.55 U1	6.25 J3, U1 5.525 A5,J3, P6
	Portsmouth, Ohio										5.725 D1
	Weirton, Wheeling, Follansbee, W. Va.	4.30 W3					4.40 W3				
	Youngstown, Ohio	4.15 R3, U1, Y1	4.15 R3, U1, Y1	5.20 Y1	4.875 U1, Y1		6.225 U1 6.725 Y1	4.10 R3, U1, Y1		6.75 Y1	5.525 Y1
	Fentona, Cal.	4.85 K1	4.85 K1		5.925 K1	7.475 K1	4.75 K1		6.60 K1	6.95 K1	
	Genoa, Utah						4.10 C7			6.25 C7	
WEST	Kansas City, Mo.	4.85 S2	4.85 S2		5.575 S2	6.925 S2					
	Los Angeles, Torrance, Cal.	4.85 B2,C7	4.85 B2,C7	6.65 R3	5.925 B2	6.925 B2					
	Minnequa, Colo.										
	San Francisco, Niles, Pittsburg, Cal.	4.85 C7,P9 4.90 B2	4.85 C7,P9 4.90 B2			6.975 B2					6.475 C7
	Seattle, Wash.	4.90 B2	4.90 B2,S11			6.975 B2	5.00 B2			7.15 B2	
SOUTH	Atlanta, Ga.	4.45 A8	4.45 A8								5.775 A8
	Fairfield, Ala. Alabama City, Ala.	4.15 R3,T2	4.15 R3,T2			6.225 T2	4.10 R3,T2			6.25 T2	5.525 R3, T2
	Houston, Texas Ft. Worth, Texas	4.65 S2	4.65 S2		5.375 S2		4.60 S2				

Steel Prices

(Effective July 28, 1953)

Key to Steel Producers

With Principal Offices

- A1 Acme Steel Co., Chicago
- A2 Alan Wood Steel Co., Conshohocken, Pa.
- A3 Allegheny Ludlum Steel Corp., Pittsburgh
- A4 American Clad Metals Co., Carnegie, Pa.
- A5 American Steel & Wire Div., Cleveland
- A6 Angell Nail & Chaplet Co., Cleveland
- A7 Armco Steel Corp., Middletown, O.
- A8 Atlantic Steel Co., Atlanta, Ga.
- B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
- B2 Bethlehem Pacific Coast Steel Corp., San Francisco
- B3 Bethlehem Steel Co., Bethlehem, Pa.
- B4 Blair Strip Steel Co., New Castle, Pa.
- B5 Bliss & Laughlin, Inc., Harvey, Ill.
- C1 Calstrip Steel Corp., Los Angeles
- C2 Carpenter Steel Co., Reading, Pa.
- C3 Central Iron & Steel Co., Harrisburg, Pa.
- C4 Claymont Products Dept., Claymont, Del.
- C5 Cold Metal Products Co., Youngstown
- C6 Colorado Fuel & Iron Corp., Denver
- C7 Columbia-Geneva Steel Div., San Francisco
- C8 Columbia Steel & Shafting Co., Pittsburgh
- C9 Continental Steel Corp., Kokomo, Ind.
- C10 Copperweld Steel Co., Glassport, Pa.
- C11 Crucible Steel Co. of America, New York
- C12 Cumberland Steel Co., Cumberland, Md.
- C13 Cuyahoga Steel & Wire Co., Cleveland
- D1 Detroit Steel Corp., Detroit
- D2 Detroit Tube & Steel Div., Detroit
- D3 Driver Harris Co., Harrison, N. J.
- D4 Dickson Weatherproof Nail Co., Evanston, Ill.
- E1 Eastern Stainless Steel Corp., Baltimore
- E2 Empire Steel Co., Mansfield, O.
- F1 Firth Sterling, Inc., McKeesport, Pa.
- F2 Fitzsimmons Steel Corp., Youngstown
- F3 Follanabee Steel Corp., Follanabee, W. Va.

- G1 Globe Iron Co., Jackson, O.
- G2 Granite City Steel Co., Granite City, Ill.
- G3 Great Lakes Steel Corp., Detroit
- H1 Hanna Furnace Corp., Detroit
- I1 Ingersoll Steel Div., Chicago
- I2 Inland Steel Co., Chicago
- I3 Interlake Iron Corp., Cleveland
- J1 Jackson Iron & Steel Co., Jackson, O.
- J2 Jessop Steel Corp., Washington, Pa.
- J3 Jones & Laughlin Steel Corp., Pittsburgh
- J4 Joslyn Mfg. & Supply Co., Chicago
- K1 Kaiser Steel Corp., Fontana, Cal.
- K2 Keystone Steel & Wire Co., Peoria
- K3 Koppers Co., Granite City, Ill.
- L1 Laclede Steel Co., St. Louis
- L2 La Salle Steel Co., Chicago
- L3 Lone Star Steel Co., Dallas
- L4 Lukens Steel Co., Coatesville, Pa.
- M1 Mahoning Valley Steel Co., Niles, O.
- M2 McLouth Steel Corp., Detroit
- M3 Mercer Tube & Mfg. Co., Sharon, Pa.
- M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.
- M5 Monarch Steel Co., Inc., Hammond, Ind.
- M6 Mystic Iron Works, Everett, Mass.
- N1 National Supply Co., Pittsburgh
- N2 National Tube Co., Pittsburgh
- N3 Niles Rolling Mill Div., Niles, O.
- N4 Northwestern Steel & Wire Co., Sterling, Ill.
- N5 Newport Steel Corp., Newport, Ky.
- O1 Oliver Iron & Steel Co., Pittsburgh
- P1 Page Steel & Wire Div., Monessen, Pa.
- P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
- P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
- P4 Pittsburgh Coke & Chemical Co., Pittsburgh
- P5 Pittsburgh Screw & Bolt Co., Pittsburgh
- P6 Pittsburgh Steel Co., Pittsburgh

- P7 Portsmouth Div., Detroit Steel Corp., Detroit
- P8 Plymouth Steel Co., Detroit
- P9 Pacific States Steel Co., Niles, Cal.
- P10 Precision Drawn Steel Co., Camden, N. J.
- R1 Reeves Steel & Mfg. Co., Dover, O.
- R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
- R3 Republic Steel Corp., Cleveland
- R4 Roebling Sons Co., John A., Trenton, N. J.
- R5 Rotary Electric Steel Co., Detroit
- S1 Sharon Steel Corp., Sharon, Pa.
- S2 Sheffield Steel Corp., Kansas City
- S3 Shenango Furnace Co., Pittsburgh
- S4 Simonds Saw & Steel Co., Fitchburg, Mass.
- S5 Sloss Sheffield Steel & Iron Co., Birmingham
- S6 Standard Forging Corp., Chicago
- S7 Stanley Works, New Britain, Conn.
- S8 Superior Drawn Steel Co., Monaca, Pa.
- S9 Superior Steel Corp., Carnegie, Pa.
- S10 Sweet's Steel Co., Williamsport, Pa.
- S11 Seidelhuber Steel Rolling Mills, Seattle
- T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
- T2 Tennessee Coal & Iron Div., Fairfield
- T3 Tennessee Products & Chem. Corp., Nashville
- T4 Thomas Strip Div., Warren, O.
- T5 Timken Steel & Tube Div., Canton, O.
- T6 Tremont Nail Co., Warcham, Mass.
- T7 Texas Steel Co., Fort Worth
- U1 United States Steel Co., Pittsburgh
- U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
- W1 Wallingford Steel Co., Wallingford, Conn.
- W2 Washington Steel Corp., Washington, Pa.
- W3 Weirton Steel Co., Weirton, W. Va.
- W4 Wheatland Tube Co., Wheatland, Pa.
- W5 Wheeling Steel Corp., Wheeling, W. Va.
- W6 Wickwire Spencer Steel Div., Buffalo
- W7 Wilson Steel & Wire Co., Chicago
- W8 Wisconsin Steel Co., S. Chicago, Ill.
- W9 Woodward Iron Co., Woodward, Ala.
- W10 Wyckoff Steel Co., Pittsburgh
- Y1 Youngstown Sheet & Tube Co., Youngstown

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about \$200 per net ton.

	BUTTWELD														SEAMLESS							
	1/2 In.		3/4 In.		1 In.		1 1/4 In.		1 1/2 In.		2 In.		2 1/2-3 In.		2 In.		2 1/2 In.		3 In.		3 1/2-4 In.	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
STANDARD T. & C.																						
Sparrows Pt. B3	24.25	8.0	27.25	12.0	29.75	15.5	32.25	16.5	32.75	17.5	33.25	18.0	34.75	18.0								
Youngstown R3	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0								
Fontana K1	13.25	+2.0	16.25	1.0	18.75	4.5	21.25	5.5	21.75	6.5	22.25	7.0	23.75	7.0								
Pittsburgh J3	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5
Alton, Ill. L1																						
Sharon M3	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5
Pittsburgh N1	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5
Wheeling W5	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5
Woodland W4	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5
Youngstown Y1	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5
Indiana Harbor Y1	25.25	9.0	28.25	13.0	30.75	16.5	33.25	17.5	33.75	18.5	34.25	19.0	35.75	19.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5
Lorain N2	26.25	10.0	29.25	14.0	31.75	17.5	34.25	18.5	34.75	19.5	35.25	20.0	36.75	20.0	15.75	0.0	19.75	2.5	22.25	5.0	23.75	6.5
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. B3	27.75	13.0	31.75	17.0	33.75	20.5	34.25	19.5	34.75	20.5	35.25	21.0	35.75	20.0								
Youngstown R3	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0								
Fontana K1	16.75		20.75		22.75		23.25		23.75		24.25		24.75									
Pittsburgh J3	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75
Alton, Ill. L1																						
Sharon M3	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75
Pittsburgh N1	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75
Wheeling W5	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75
Woodland W4	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75
Youngstown Y1	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75
Indiana Harbor Y1	28.75	14.0	32.75	18.0	34.75	21.5	35.25	20.5	35.75	21.5	36.25	22.0	36.75	21.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75
Lorain N2	29.75	15.0	33.75	19.0	35.75	22.5	36.25	21.5	36.75	22.5	37.25	23.0	37.75	22.0	16.25	0.75	20.75	3.75	23.75	6.75	28.75	9.75

Galvanized discounts based on zinc, at 11¢ per lb. East St. Louis. For each 1¢ change in zinc, discounts vary as follows: 1/2 in., 3/4 in., and 1 in., 1 pt.; 1 1/4 in., 1 1/2 in., 2 in., 3/4 pt.; 2 1/2 in., 3 in., 3 1/2 in., 1 pt. Calculate discounts on even cents per lb of zinc, i.e., if zinc is 16.51¢ to 17.50¢ per lb, use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢. Through only butt-weld and seamless, 2 1/4 pts. higher discount. Plain ends, butt-weld and seamless, 3 in. and under, 4 1/2 pts. higher discount. Butt-weld jobbers' discount, 5 pct. East St. Louis zinc price now 11.0¢.

Steel Prices

(Effective July 28, 1954)

CLAD STEEL

Stainless-carbon	Plate	Sheet
No. 304, 20 pct.		
Coatesville, Pa. L ⁶	*32.7	
Washington, Pa. J ²		
Claymont, Del. C ⁴		
New Castle, Ind. I ²		
Nickel-carbon		
10 pct. Coatesville, Pa. L ⁴	37.5	
Inconel-carbon		
10 pct. Coatesville, Pa. L ⁴	46.10	
Monel-carbon		
10 pct. Coatesville, Pa. L ⁴	38.90	
No. 302 Stainless copper stainless, Carnegie, Pa. A ⁴		
Aluminized steel sheets, hot dip, Butler, Pa., A ⁷		

* Includes annealing and pickling, sandblasting.

ELECTRICAL SHEETS

22 Ga. H-R cut length	Armature	Elec.	Meter	Dynamo	Transf. 72	Transf. 65	Transf. 58
F.o.b. Mill Cents Per Lb.							
Beech Bottom W ⁵	8.35	9.60	10.40	10.95	11.50	12.20	
Brackenridge A ³	8.35	9.60	10.40	10.95	11.50	12.20	
Granite City G ²							
Ind. Harbor I ³	7.85	8.35	9.00				
Mansfield E ²							
Newport, Ky. N ⁵	7.85	8.35	9.00	10.40	10.95		
Niles, O. N ³	7.85	8.35					
Vandergrift U ¹	7.85	8.35	9.00	10.40	10.95	11.50	12.20
Warren, O. R ³	7.85	8.35	9.00				
Zanesville A ⁷	7.85	8.35	9.00	10.40	10.95	11.50	12.20

TOOL STEEL

F.o.b. mill

Add 4.7 pct to base and extras.

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	\$1.505
18	4	1	—	5	\$2.13
18	4	2	—	—	\$1.65
1.5	4	1.5	8	—	\$1.06
6	4	2	6	—	\$6.56
High-carbon chromium					63.5¢
Oil hardened manganese					35¢
Special carbon					32.5¢
Extra carbon					27¢
Regular carbon					23¢

Warehouse prices on and east of Mississippi are 3.5¢ per lb. higher. West of Mississippi, 5.5¢ higher.

CAST IRON WATER PIPE

Per Net Ton
6 to 24-in., del'd Chicago \$110.30 to \$113.80
6 to 24-in., del'd N.Y. 112.50 to 114.50
6 to 24-in. Birmingham. 96.50 to 101.00
6-in. and larger f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less \$128.00 to \$130.00
Class "A" and gas pipe, \$5 extra; 4-in. pipe is \$5 a ton above 6-in.

WARE-HOUSES

Cities	City Delivery Charge	Sheets		Strip		Plates	Shapes	Bars		Alloy Bars			
		Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled A 4615	Hot-Rolled A 4140	Cold-Drawn A 4615
Baltimore	\$.20	6.20	7.64	7.81 ³	7.00	.....	6.85	6.98	6.86	7.92	.....	.....	.....
Birmingham	.15	6.10	7.00	8.00 ⁴	6.30	.....	6.35	6.35	6.15	8.75	.....	.....	.....
Boston	.20	6.89	7.83	9.23	7.13	9.23-9.35 ²	7.13	7.06	6.87	8.10	12.40	12.25-12.28	14.75-14.78
Buffalo	.20	6.18	7.15	9.00	6.65	.....	6.65	6.55	6.35	7.45	.....	12.17-12.18	14.45-14.55
Chicago	.20	6.20	9.01	6.79	6.42	.....	6.48	6.50	6.45	7.30	.....	11.75	14.25
Cincinnati	.20	6.18	7.12	8.05	6.42	.....	6.33	6.46	6.28	7.30	.....	.....	.....
Cleveland	.20	6.46	7.14	8.42	6.67	.....	6.80	6.88	6.53	7.61	.....	12.12	14.52
Columbus	.20	6.18	7.12	7.90	6.58	.....	6.50	6.79	6.34	7.40	.....	11.89	14.39
Denver	.20	7.95	8.85	10.10	8.20	9.55	7.95	7.95	8.05	9.05	.....	.....	15.25-15.75
Detroit	.20	6.35	7.25	8.34	6.30	7.36	6.53	6.93	6.56	7.60	12.27	12.12	14.52
Houston	.20	6.45	7.32	7.31	8.35	.....	6.85	6.57	7.69	.....	.....	.....	13.44-14.62
Kansas City	.20	7.15	7.85	.....	7.45	.....	7.20	7.35	7.45	9.85	.....	12.95	.....
Los Angeles	.20	6.85	7.79	8.72	7.09	.....	7.05	7.13	6.95	8.08	.....	.....	.....
Los Angeles	.20	7.25	9.00	9.60	7.55	10.75-11.30	7.20	7.35	7.15	9.40	13.40-13.55	13.05	15.75-16.05
Memphis	.10	6.79	7.69	.....	6.90	.....	7.01	7.09	6.88	7.89	.....	.....	.....
Milwaukee	.20	6.35	7.29	8.22	6.50	.....	6.50	6.63	6.45	7.57	.....	11.92	14.42
New Orleans	.15	6.51	7.56	8.25	6.63	.....	6.73	6.81	6.60	8.42	.....	.....	.....
New York	.30	6.66	7.75	9.02	7.16	9.05	6.88	6.96	6.75	8.57	.....	11.99-12.29	10.39-12.14
Norfolk	.20	6.90	.....	.....	7.20	.....	7.15	7.20	7.20	8.50	.....	.....	14.04-14.64
Philadelphia	.25	6.53	7.55-8.25	8.35	7.02	.....	6.63	6.67	6.87	7.94	12.04	11.89	14.29
Pittsburgh	.20	5.95	6.82	8.30-8.60	6.20-6.55	.....	6.03	6.07	5.98	7.12	.....	11.45-11.75	13.75-14.25
Portland	.10	6.18	8.00	9.95	.....	.....	6.33	6.46	6.28	7.40	.....	.....	.....
Salt Lake City	.20	9.05	10.80	10.65	9.35	.....	8.70	8.85	9.20	11.25	.....	.....	.....
San Francisco	.15	7.35	8.70	9.90-10.15	7.60	10.35	7.20	7.25	7.15	9.75-9.85	13.55	12.80-13.05	15.55-16.05
Seattle	.20	7.95	8.50	9.90	7.82	.....	7.39	7.30	7.38	9.93	.....	13.30	15.80
St. Louis	.20	6.48	7.42	8.35	6.72	.....	6.73	6.86	6.58	7.70	12.20	12.05	14.45
St. Paul	.15	6.84	7.78	8.71	7.08	.....	6.99	7.12	6.94	8.06	.....	12.19	.....

Base Quantities (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over. Alloy bars; 1000 to 1999 lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity. Exceptions: (*) 500 to 1499 lb. (*) 20,000 lb or over. (*) 450 to 1499 lb. (*) 500 to 9999 lb.

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Col	Col	Col	Col	Col	Col	Col
Alabama City R ³	131	140	149	153	4.675	7.075	
Albuquerque, Pa. J ³							
Atlanta A ⁸							
Bartonsville K ²							
Buffalo W ⁶							
Chicago, Ill. N ⁴	131	143	149	150	4.675	7.225	
Cleveland A ⁶							
Crawfordsville M ⁴	133	145	151	153	4.675	7.325	
Donora, Pa. A ⁵	131	140	149	153	4.675	7.075	
Duluth A ⁵	131	140	145	149	153	4.675	7.075
Fairfield, Ala. T ²	131	140	149	153	4.675	7.075	
Galveston D ⁴	139						
Houston S ²							
Johnston, Pa. B ³	131	143	149	150	4.675	7.225	
Joliet, Ill. A ⁵	131	140	149	153	4.675	7.075	
Kokomo, Ind. C ⁹	133	142	151	155	4.675	7.175	
Los Angeles B ²							
Kansas City S ²							
Minneapolis C ⁶							
Monessen P ⁶	131						
Moline, Ill. R ³			149				
Pittsburg, Cal. C ⁷	150	163	173	173	7.425	8.625	
Portsmouth P ⁷							
Rankin, Pa. A ⁵	131	140					
So. Chicago R ³	131	140	149	153	4.675	7.075	
S. San Fran. C ⁶	131	140	145	149	153	4.675	7.075
Sparrows Pt. B ³	133			151	158	158	7.775
Struthers, O. Y ¹							
Worcester A ⁵	137						
Williamsport, Pa. S ¹⁰							

Cut Nails, carloads, base \$8.00 per keg (less 20¢ in jobbers), at Conshohocken, Pa., (A²).

* Alabama City and So. Chicago don't include zinc in galvanized products computed with zinc at 11.8¢ per lb.

C-R SPRING STEEL

Cents Per Lb. F.o.b. Mill	CARBON CONTENT				
	0.28-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Bridgeport, Conn. S ⁷	6.15	8.00	8.60	10.55	12.65
Carnegie, Pa. S ⁹	.....	8.00	8.60	10.55	12.65
Cleveland A ⁵	5.45	7.65	8.60	10.58	12.66
Detroit D ²	6.05	8.25	8.85	.....	.....
New Castle, Pa. B ⁴	5.80	8.00	8.60	.....	.....
New Haven, Conn. D ¹	.....	8.00	8.60	10.55	12.65
Sharon, Pa. S ¹	5.80	8.00	8.60	10.55	12.65
Trenton R ⁴	.....	7.95	8.55	10.50	12.60
Wairton, W. Va. W ³	5.80	8.00	8.60	10.55	12.65
Worcester, Mass. A ⁵	5.75	7.95	8.60	10.55	12.65
Youngstown C ⁵	.....	.....	.....	.....	.....

* Sold on Pittsburgh base.

BOILER TUBES

\$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size		Seamless		Elec. Weld.	
	OD-In.	I.D. Ga.	H.R.	C.D.	H.R.	C.D.
Babcock & Wilcox	2	13	30.08	36.28	26.51	31.98
	2 1/2	12	40.51	48.86	35.70	43.07
	3	12	45.92	55.39	.....	49.73
	3 1/2	11	53.60	64.65	48.13	58.86
	4	10	65.91	79.50	63.92	77.10
National Tube	2	13	.....	32.98	24.88	.....
	2 1/2	12	36.82	44.41	33.50	.....
	3	12	42.52	51.28	38.60	.....
	3 1/2	11	49.63	59.87	45.14	.....
	4	10	65.91	79.50	59.97	.....
Pittsburgh Steel	2	13	27.34	32.98	.....	.....
	2 1/2	12	36.82	44.41	.....	.....
	3	12	42.52	51.28	.....	.....
	3 1/2	11	49.63	59.87	.....	.....
	4	10	65.91	79.50	.....	.....

Ferroalloy Prices

(Effective July 28, 1953)

Ferrochrome

Contract prices, cents per lb contained Cr, lump size, bulk, in carloads, delivered.
65-72% Cr, 2% max. Si.
0.025% C ... 34.50 0.20% C ... 33.50
0.06% C ... 34.50 0.50% C ... 33.25
0.10% C ... 34.00 1.00% C ... 33.00
0.15% C ... 33.75 2.00% C ... 32.75
65-69% Cr, 4-9% C ... 24.75
62-66% Cr, 4-6% C, 6-9% Si ... 25.60

S. M. Ferrochrome

Contract price, cents per pound, chromium contained, lump size, delivered.
High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.
Carloads ... 25.85
Ton lots ... 28.00
Less ton lots ... 29.50

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 3¢ for each additional 0.25% of N.

Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.
0.10% max. C ... \$1.18
0.50% max. C ... 1.14
9 to 11% C ... 1.11

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.)
Contract price, carloads, f.o.b. Niagara Falls, freight allowed; lump 4-in. x down, bulk 2-in. x down, 25.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.
Bulk 1-in. x down, 25.90¢ per lb contained Cr plus 12.60¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, lump delivered.
30-33% Cr, 60-65% Si, 3.00% max. Fe.
Carloads ... 19.00
Ton lots ... 22.10
Less ton lots ... 23.60

Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy lump, delivered.
16-20% Ca, 14-18% Mn, 53-59% Si.
Carloads ... 20.00
Ton lots ... 22.30
Less ton lots ... 23.30

SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.
Ton lots ... 17.50
Less ton lots ... 19.50

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 33-42% Cr, 17-19% Si, 8-11% Mn.
Ton lots ... 16.50
Less ton lots ... 17.75

Graphidex No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.
Carload packed ... 17.50
Ton lots to carload packed ... 18.50
Less ton lots ... 20.00

Ferromanganese

Maximum contract base price, f.o.b., lump size:
Producing Point Base Mn Cents Contained per lb (Contained Mn)
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore. 76-80% 13.15 (Per lb of alloy)
Clairton, Pa. 74-76% 10.00
Johnstown, Pa. 74-76% 10.00
Sheridan, Pa. 74-76% 10.00
Add or subtract 0.1¢ for each 1% Mn above or below base content.
Briquets—delivered, 66 pct. Mn.
Carload, bulk ... 12.50
Ton lots, packed ... 14.05

Spiegeleisen

Contract prices, per gross ton, lump, f.o.b. Palmerton, Pa.
Manganese Silicon
16 to 19% 3% max. \$84.00
19 to 21% 3% max. 86.00
21 to 23% 3% max. 88.50
23 to 25% 3% max. 91.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.
Carload, packed ... 36.95
Ton lots ... 38.45

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.
Carloads ... 30.00
Ton lots ... 32.00
Less ton lots ... 34.00 to 37.00
Premium for hydrogen-removed metal ... 1.50

Low-Carb Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.
Carloads Ton Less
0.07% max. C, 0.06% P, 90% Mn ... 30.00 31.85 33.05
0.07% max. C ... 27.95 29.80 31.00
0.15% max. C ... 27.45 29.30 30.50
0.30% max. C ... 26.95 28.80 30.00
0.50% max. C ... 26.45 28.30 29.50
0.75% max. C, 80-85% Mn, 5.0-7.0% Si ... 23.45 25.30 26.50

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn ... 21.35¢

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢.
Carload bulk ... 11.40
Ton lots ... 13.05
Briquet contract basis carlots, bulk delivered, per lb of briquet ... 12.65
Ton lots, packed ... 14.25

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$95.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$93.00. Add \$1.00 per ton for each additional 0.50% Si up to and including 17%. Add \$1.45 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.
96% Si, 2% Fe ... 18.00
97% Si, 1% Fe ... 18.50

Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si briquets.
Carloads, bulk ... 6.95
Ton lots ... 8.55

Electric Ferrosilicon

Contract price, cents per lb contained Si, lump, bulk, carloads, delivered.
25% Si ... 20.00 75% Si ... 14.30
50% Si ... 12.40 85% Si ... 15.55
65% Si ... 13.60 90.95% Si ... 17.00

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.
Ton lots Cast Turnings Distilled
Less ton lots \$2.95 \$2.95 \$3.75
2.40 3.30 4.55

Ferrovandium

35-55% contract basis, delivered, per pound, contained V.
Openhearth ... \$3.00-\$3.10
Crucible ... 3.10-3.20
High speed steel (Primos) ... 3.20-3.25

Alsiifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.

Carloads ... 3.30
Ton lots ... 11.30

Calcium molybdate, 46.2-46.6% f.o.b. Langeloth, Pa., per pound contained Mo ... \$1.15

Ferrocolumbium, 50-60% 2 in. x D contract basis, delivered per pound contained Cb.
Ton lots ... \$6.48
Less ton lots ... 6.45

Ferro-Tantalum-Columbium, 20% Ta, 40% Cb, 0.30% C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta ... \$4.75

Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo ... \$1.25

Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$3 unitage, per gross ton ... \$65.00
10 tons to less carload ... \$75.00

Ferrotitanium, 40% regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti ... \$1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti ... \$1.50
Less ton lots ... 1.55

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload, per net ton ... \$177.00

Ferrotungsten, ¼ x down, packed, per pound contained W, ton lots, f.o.b. ... \$4.45

Molybde oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa. ... \$1.10
bags, f.o.b. Washington, Pa. Langeloth, Pa. ... \$1.15

Simanal, 20% Si, 20% Mn, 30% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound ... \$14.50
Carload, bulk lump ... 15.75
Ton lots, bulk lump ... 16.25
Less ton lots, lump ... 16.25

Vanadium Pentoxide, 85-89% V₂O₅, contract basis, per pound contained V₂O₅ ... \$1.25

Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.
Ton lots ... 21.00

Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.
Carload, bulk ... 8.00

Boron Agents

Borasil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B ... \$5.25

Bortam, f.o.b. Niagara Falls
Ton lots, per pound ... 45¢
Less ton lots, per pound ... 50¢

Corbortam, Ti 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C, 4.5-7.5% f.o.b. Suspension Bridge, N. Y., freight allowed.
Ton lots, per pound ... 10.00

Ferroboreon, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots ... \$1.20
F.o.b. Wash. Pa.; 100 lb up
10 to 14% B85
14 to 10% B ... 1.30
19% min. B ... 1.50

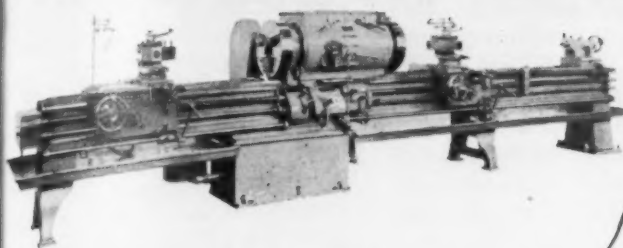
Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.
No. 1 ... \$1.00
No. 668¢
No. 758¢

Manganese-Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd
Ton lots ... \$1.45
Less ton lots ... 1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered
Less ton lots ... \$2.05

Sileas, contract basis, delivered.
Ton lots ... \$6.00

WORK FROM **Both Ends** with.. **LEHMANN Large Hole** **DOUBLE-ENDER HYDRATROL LATHES**



Double-End Hydratrol Lathes are built in sizes from 18" with holes up to 7 1/8" to larger sizes with holes to suit the job. Double-End operations avoid necessity for resetting the work, and insure relative concentricity of boring and turning operations and squareness of faces at both ends.

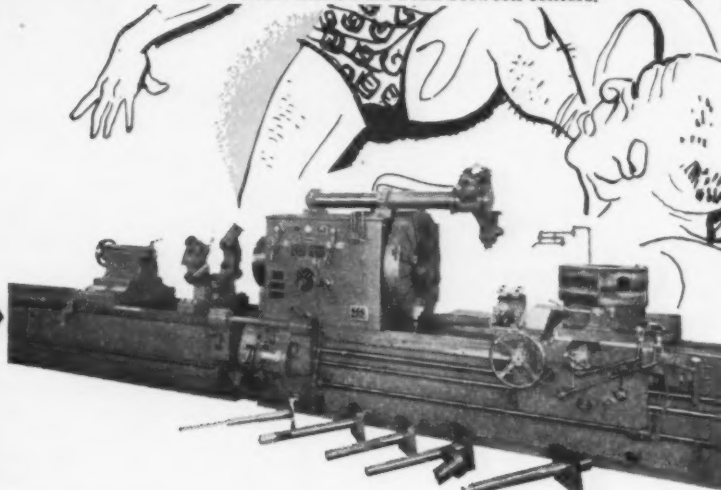
50" swing—50 foot length, 19" hole in spindle. 24" Hexagon Turret on carriage with profile bar for profile boring and grinding. Retractable diamond profile wheel dresser. Weight 72,000 lbs.

LEHMANN
MACHINE COMPANY

GRAND at CHOUTEAU • ST. LOUIS 3, MO.

DIVISION OF NOVO ENGINE CO.

18" x 13 foot x 6 foot Double-End Hydratrol, hollow spindle, Engine Lathe; with 7 1/8" hole in spindle; having hardened ways and a 10" long spindle extension. Equipped with carriages on both beds. Arranged for power feed and thread cutting. Tailstock for additional work between centers.



Boring Tools by Lehmann

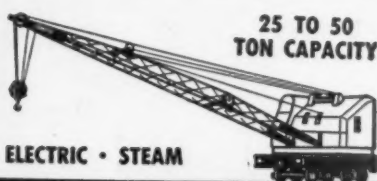
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Wm. H. Ottmiller Co.
YORK, PENNA.

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LOCOMOTIVE
CRANES

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SCREW MACHINE PRODUCTS
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Milton 2, Pa.

STEEL HAND AND POWER
BENDING
BRAKES

For Single and Quantity Runs
Bending Steel Plate and Sheet
Metal

Special Bending Brakes
Double Folder Brakes



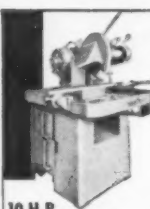
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STEEL BENDING BRACKS
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STRIP, COILED
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EYELETS—BRASS, STEEL AND ZINC
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10 H.P.

TABOR ABRASIVE
CUTOFF MACHINES

They're cut out to cutoff
bar stock and shapes

Send for literature. Specify shape,
size and material to be cut.

TABOR Manufacturing Co.
6222 Tacony St., Phila. 35, Pa.



3 H.P.

RE-NU-BILT GUARANTEED ELECTRIC POWER EQUIPMENT

D. C. MOTORS

Qu.	H.P.	Make	Type	Volts	RPM
1	2200	G.E.	MCF	600	400/500
1	2000	Whse.	Mill	600	230/460
1	940	Whse.	QM	230	140/170
1	800	Whse.		230	450/550
1	825	Whse.		230	95/190
1	600	Al. Ch.		230	400/800
1	500	Whse.	CC-216	600	300/900
1	450	Whse.		550	415
2	400	G.E.	MCF	550	300/1050
2	300	Whse.	CB-5094	230	575/1150
2	200/300	G.E.	MPC	230	360/920
1	200	Rel.	1970T	230	720
1	200	Whse.	CB-5113	230	400/800
1	150	G.E.		600	250/750
1	150	Cr. Wh.	65H	230	1150
1	150	Cr. Wh.	83H-TEFC	230	960
1	150	Whse.	SK-151B	230	900/1800
1	150	Whse.	SK-201	230	360/950
1	50/120	G.E.	MCF	230	250/1000
2	100	Whse.	SK-181	230	450/1000
2	100	G.E.	CDP-115	230	1750
MILL & CRANE					
1	50	G.E.	CO-1810	230	725
1	20	Whse.	K-5	230	975
4	15	Whse.	K-5	230	630
3	10	C.W.	SCM-AH	230	1150
1	10	G.E.	MD-104	230	400/800
8	6.25	Whse.	K-3	230	680
4	3	C.W.	SCM-FF	230	1750
2	3	Whse.	HK-2	230	835

A.C. MOTORS

3 phase—60 cycle SLIP RING

Qu.	H.P.	Make	Type	Volts	Speed
1	1500	G.E.	MT-498	2300	300
1	1500	ABB		2300	720
1	1200	G.E.	MT	2300	275
2	1000	A.C.	Mill	2300	240
1	500	C.W.	550	350	350
1	500	G.E.	I-M	2300	900
1	400	Whse.	CW	440	514
1	400	Whse.	CW-1218	2200	435
1	350	G.E.	MT-442Y	2200/4000	253
2	300	G.E.	MT-365Y	2300	800
1	250	G.E.	MT-424-Y	4000	257
1	250	G.E.	MT-5598	2200	1800
1	250	Al. Ch.		550	600
1	200	Cr. Wh.	26QB	440	505
1	200	G.E.	IM-16	440	600
1	200	G.E.	IM	440	435
1	200	G.E.	MTP	440	1170
1	150(unused)	Whse.	CW	2300	435
1	150	G.E.	IM-16	440	600
2	125	A.C.		440	865
1	125	Al. Ch.		440	720
4	125	G.E.	MT-366Y	440/2200	435
1	100	G.E.	IM	440	600
5	100	A.C.	ANY	440	695
1	100	G.E.	IM-16	2200	435
1	100	Whse.	CW-368A	440	700

SQUIRREL CAGE

2	650	G.E.	FT-559BY	440	3570
2	450	Whse.	CS-1420	2300/1150	354
1	200	G.E.	IK-17	440	580
2	200	G.E.	KT-857	440	1800
1	150	Whse.	CS-8568	440	580
1	150	Whse.	CS	440	580
1	150/75	G.E.	IK	440	900/450
2	125	Al. Ch.	ARW	2200	1750
1	125	Whse.	MS	440	485

SYNCHRONOUS

2	3500	G.E.	TS	2300	237
2	2100	G.E.	ATI	2300	360
2	1750	G.E.	ATI	2300	3600
2	2000	Whse.		2300	120
2	735	G.E.	ATI	2200/12000	600
1	450	Whse.		2200	450
2	350	G.E.	TS	2200	156

M-G Sets—3 Ph. 60 Cy

Qu.	K.W.	Make	RPM	D.C. Volts	A.C. Volts
2	2000/2400	G.E.	450	250/300	2300/4600
2	1750/2100	G.E.	514	250/300	2300/4600
1	2000	G.E.	500	250	11000
2	2000	G.E.	514	600	6600/13200
2	1500	G.E.	514	250	6600/13200
1	1500	G.E.	720	600	6600/13200
1	1500	G.E.	600	600	4160
1	1500	C.W.	514	30/115	4000/13000
2	1000	Whse.	900	600	4160
1	1000	G.E.	900	260	6600
1	1000(3U)	G.E.	900	250	2200
1	750	Whse.	900	275	4160
1	750	C.W.	514	30/115	2300
1	600	G.E.	720	250	440/2300
1	500	G.E.	720	125	2300
1	500	Whse.	900	125/250	440
1	500	Whse.	1200	125/250	2300
1	400(3U)	Cr. Wh.	1200	125/250	2300
1	150	Whse.	1200	275	2300
1	140(3U)	Cr. Wh.	600	125/250	440/2300
1	100	G.E.	1200	250	2300/4000
1	100	G.E.	1170	125	220/440

FREQUENCY CHANGER SETS

Qu.	K.W.	Make	Freq.	Voltages
1	12500	Whse.	25/60	13200/13200
1	3000	G.E.	25/60	2300/2300/4000
2	2500	G.E.	25/62.5	2300/2300
1	1000	G.E.	25/58.3	4400/2300
1	500	Al. Ch.	2560	11000/2300

BELYEA COMPANY, INC.
47 Howell Street, Jersey City 6, N. J.

The Clearing House

NEWS OF USED AND REBUILT MACHINERY

Give Overnight delivery . . . The used and rebuilt machinery field in Detroit has been tapped by the airways. Many rush orders, particularly those placed for high priority defense projects, have been speedily processed with shipments completed by air express within 24 hours after the order was received.

Montgomery Engineering Co., Detroit, has been a frequent user of air express and recently used the air lanes to rush portable pneumatic tools to the Piper Aircraft Corp., Lock Haven, Pa., and to Servel Inc., Evansville, Ind. The pneumatic riveters, hammers and squeezers are used to fabricate wing panels and other aircraft parts.

Better Service . . . Probably the largest rebuilder of portable air tools, Montgomery Engineering is a frequent user of air freight since it provides customers with the maximum in service.

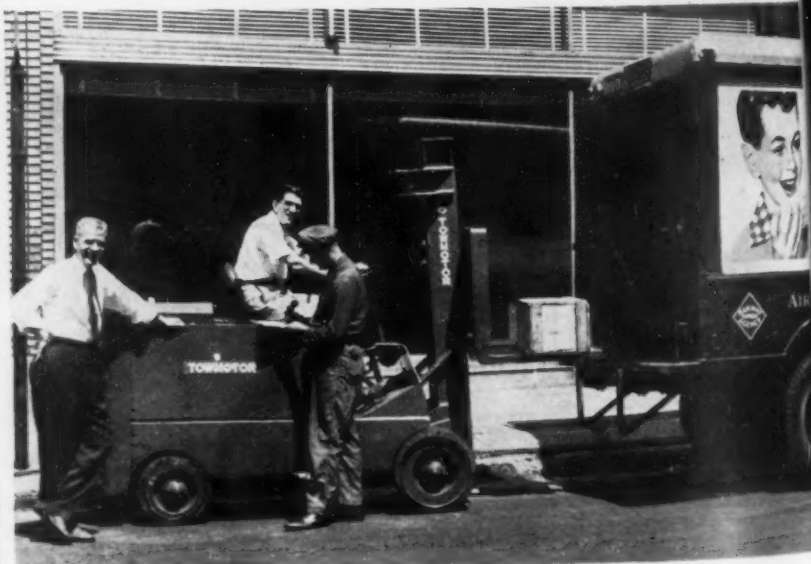
"We can always deliver within 24 hours," explains Max Wender, president of the company. "On particularly hurry-up jobs, we have told customers the flight

number and by meeting the flight they have received their shipments in 10 hours."

Specialize in Air Tools . . . Rebuilt air tools are a specialty of Montgomery Engineering, although the company also handles other lines of machinery and factory equipment. By maintaining a large stock and using aggressive advertising, the firm has built up a \$20,000 per month business in air tools alone. It uses its own shop to manufacture parts needed to rebuild tools.

Inventory at Montgomery Engineering usually numbers around 15,000 tools. To maintain its stock at this high level, the company keeps an eager eye on all machinery sales in the area.

Success of this company's method of operation, is an indication of the way some used and rebuilt machinery firms avoid the problems resulting from attempting to cover too large a field. By specializing in specific types of machinery, a medium-sized organization can become a recognized leader in handling certain equipment lines.



TO FILL RUSH ORDER for rebuilt pneumatic riveters, hammers and squeezers from Servel Inc., Evansville, Ind., Montgomery Engineering Co., Detroit, sends equipment by air express. Robert Travis (left) sales manager, and Max Wender, company president, make certain the equipment is delivered on time.